GenCore version 4.5

OM protein - protein search, using sw model

Run on: May 25, 2001, 15:32:12 ; Search time 18.57 Seconds
(without alignments)
61.565 Million cell updates/sec

Title: US-09-214-009-1
Perfect score: 116
Sequence: 1 XHWSYGLRPGQHWSGLRPGX 20

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 390729 seqs, 57163235 residues

Total number of hits satisfying chosen parameters: 390729

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A_Geneseq_0401:*
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2: /SIDS6/gcgdata/geneseq/geneseqp/AA1981.DAT:*
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8: /SIDS6/gcgdata/geneseq/geneseqp/AA1987.DAT:*
9: /SIDS6/gcgdata/geneseq/geneseqp/AA1988.DAT:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	103.5	89.2	20	19	W47438	Antigenic peptide.
2	103.5	89.2	20	20	Y31174	Ubiquitin fusion p
3	103.5	89.2	20	20	Y31178	Ubiquitin fusion p
4	103.5	89.2	21	11	R07324	Luteinising hormon
5	103.5	89.2	30	11	R07323	Luteinising hormon
6	103.5	89.2	40	20	Y31183	Ubiquitin fusion p
7	103.5	89.2	41	20	Y31182	Ubiquitin fusion p
8	103.5	89.2	42	21	B20865	GnRH tandem dimer
9	100.5	86.6	20	20	Y31177	Ubiquitin fusion p
10	100.5	86.6	20	20	Y31179	Ubiquitin fusion p
11	100.5	86.6	40	21	Y96085	Cattle gonadotropi
12	100.5	86.6	263	12	R11185	Plasmid pBTA870-en
13	100.5	86.6	283	12	R11186	Plasmid pBTA862-en
14	100.5	86.6	323	12	R11187	Plasmid pBTA859-en
15	100.5	86.6	398	21	Y96090	BHV-1 truncated gD
16	100.5	86.6	399	21	Y96093	BHV-1 truncated gD
17	100.5	86.6	411	21	Y96089	GnRH tetramer-trun
18	100.5	86.6	442	21	Y96091	GnRH tetramer-BHV-
19	89.5	77.2	21	18	W21648	Peptide containing
20	89.5	77.2	42	18	W21649	Peptide containing
21	89.5	77.2	44	18	W21650	Peptide containing
22	89	76.7	23	21	B20864	GnRH tandem repeat
23	86	74.1	695	19	W79573	LKT-GnRH chimeric
24	86	74.1	695	21	Y58361	Leukotoxin/gonadot
25	86	74.1	695	21	Y58133	Gonadotropin relea
26	85.5	73.7	49	17	W03944	GnRH 4-repeat sequ
27	85.5	73.7	49	19	W79567	GnRH-2. Synthetic
28	85.5	73.7	49	19	W61542	Peptide hormone Gn
29	85.5	73.7	49	21	Y58363	Four-copy gonadotr
30	85.5	73.7	49	21	Y58135	GnRH analogue mult
31	85.5	73.7	544	17	W03943	LKT-GnRH protein f
32	85.5	73.7	544	19	W79570	LKT-GnRH chimeric
33	85.5	73.7	977	17	W03942	LKT-GnRH protein f
34	85.5	73.7	977	19	W79569	LKT-GnRH chimeric
35	68	58.6	18	21	Y89761	Core polypeptide f
36	68	58.6	256	12	R11177	Plasmid pBTA732-en
37	67	57.8	18	21	Y89788	Core polypeptide f
38	67	57.8	22	21	Y89760	Core polypeptide f
39	65	56.0	18	21	Y89789	Core polypeptide f
40	63	54.3	26	21	Y89759	Core polypeptide f
41	60.5	52.2	257	12	R11179	Plasmid pBTA737-en
42	59	50.9	16	16	R78285	GnRH immunomimic a
43	59	50.9	16	21	Y58141	Gonadotropin relea
44	58.5	50.4	253	12	R11181	Plasmid pBTA733-en
45	58	50.0	9	20	W94891	LHRH peptide fragm

ALIGNMENTS

RESULT 1
W47438
ID W47438 standard; peptide; 20 AA.
XX
AC W47438;
XX
DT 05-JUN-1998 (first entry)
XX
DE Antigenic peptide.
XX
KW Vaccine; antigen.
XX
OS Synthetic.
XX
PN WO9749425-A1.
XX
PD 31-DEC-1997.
XX
PF 24-JUN-1997; 97WO-NL00354.
XX
PR 25-JUN-1996; 96EP-0201766.
XX
PA (DAVE-) DANISH VETERINARY INST ANIMAL VIRUS RES.
PA (DIER-) STICHTING INST DIERHOUDERIJ EN DIERGEZONHEID.
XX
PI Beekman NJCM, Dalsgaard K, Meloen RH, Schaaper WMM;
XX
DR WPI; 1998-076912/07.
XX
PT Vaccines comprising antigen bound to carrier by an in vivo labile
PT bond - especially synthetic peptide linked to fatty acid via
PT thioester or di:sulphide, provide greater immune response for weakly
PT immunogenic antigens
XX

PS Claim 9; Page 28; 36pp; English.
XX
CC A novel vaccine comprises an antigen (Ag), e.g. the present
CC peptide, and carrier connected by a bond that is labile and
CC dissociates under certain physiological conditions.
CC The vaccine, which allows dissociation of the Ag from the carrier
CC molecule, can be used to elicit better immune responses against
CC poorly immunogenic Ag then those Ag which contain a stable link to
CC the carrier molecule. Ag dissociate from the carrier in vivo,
CC resulting in better immune response for Ag that are normally only
CC weakly immunogenic. The vaccine also improves targetting to, and
CC presentation by Ag-presenting cells.
XX
SQ Sequence 20 AA;

Query Match 89.2%; Score 103.5; DB 19; Length 20;
Best Local Similarity 94.7%; Pred. No. 1.5e-08;
Matches 18; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

Qy 2 HWSYGLRPGQHWS-GLRPG 19
||||||||||||| |||||
Db 2 hwsyglrpgqhwsyglrpg 20

RESULT 2
Y31174
ID Y31174 standard; peptide; 20 AA.
XX
AC Y31174;
XX
DT 28-OCT-1999 (first entry)
XX
DE Ubiquitin fusion protein GnRH dimer for C-terminal extension.
XX
KW Ubiquitin; immunocastration; fusion protein; heat shock protein; epitope;
KW immune response stimulation; vaccine; T cell; viral; infection; cancer;
KW bacterial; parasitic; treatment; gastrointestinal disease; HIV infection;
KW pulmonary inflection; respiratory inflection; scaffold; anti-self; pig;
KW steridogenesis; gamete maturation; prostate; breast; castration; TNF;
KW tumour necrosis factor; septic shock; arthritis; Crohn's disease;
KW inflammatory bowel disease; ulcerative colitis; chorionic gonadotropin;
KW fertility; sperm protein; growth rate; antibody; detection; GnRH.
XX
OS Synthetic.
XX
PN WO9942472-A1.
XX
PD 26-AUG-1999.
XX
PF 26-JAN-1999; 99WO-US01588.
XX
PR 19-FEB-1998; 98US-0026276.
XX
PA (IGEN-) IGEN INT INC.
XX
PI Kenten JH, Lohnas GL, Pilon AL, Roberts SF, Tramontano A;
XX
DR WPI; 1999-518582/43.
XX
PT Epitope-containing fusion proteins used to generate a highly
PT specific immune responses
XX
PS Example 3; Page 40; 67pp; English.
XX
CC This invention describes a novel fusion protein, comprising a heat shock
CC protein (e.g. ubiquitin), fused to an epitope(s) in a defined manner
CC which is useful for the stimulation of a highly specific immune response
CC when administered to an animal. The protein of the invention may be
CC post-translationally modified (e.g. by the addition of fatty acids to
CC enhance immunogenicity). The fusion proteins of the invention can be
CC used as vaccines to induce an immune response. When a T cell epitope is
CC attached, they can be used for control of viral infections, bacterial
CC infections, parasitic infection and cancer. The fusion proteins can be
CC used in pharmaceutical compositions for the treatment of gastrointestinal
CC diseases, pulmonary inflections, respiratory inflections, and HIV
CC infections. The use of ubiquitin as a scaffold is also useful for the
CC presentation and stimulation of anti-self immune responses, e.g.
CC generation of anti-gonadotropin releasing hormone antibodies which result
CC in the suppression of luteinizing hormone and follicle stimulating
CC hormone. This indirectly suppresses steridogenesis and gamete maturation
CC in males and females. This type of anti-self response in humans is useful
CC in the treatment of prostate cancer and breast cancer. In livestock, the
CC ability to stimulate an anti-self response provides a simple alternative
CC to physical castration. Immunocastration of pigs is a better alternative
CC to physical castration, as it does not result in any of the detrimental
CC side effects associated with physical castration. Other examples of
CC diseases and conditions treated with self proteins fused with ubiquitin
CC are TNF and its epitopes to modulate septic shock, arthritis,
CC inflammatory bowel disease, Crohn's disease, and ulcerative colitis; Ig
CC epsilon heavy chain for the control of allergic reactions; chorionic
CC gonadotropin for fertility control; and sperm proteins for fertility
CC control. A further use of the fusion proteins is as part of a vaccine to
CC enhance growth rate and thereby the final weight of the livestock prior
CC to shipment to market. In addition, the fusion proteins of the invention
CC can be used to detect and identify antibodies from experimental samples.
CC This sequence represents a GnRH dimer used in the construction of a
CC ubiquitin fusion protein described in the method of the invention.
XX
SQ Sequence 20 AA;

Query Match 89.2%; Score 103.5; DB 20; Length 20;
Best Local Similarity 94.7%; Pred. No. 1.5e-08;
Matches 18; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

Qy 2 HWSYGLRPGQHWS-GLRPG 19
||||||||||||| |||||
Db 2 hwsyglrpgqhwsyglrpg 20

RESULT 3
Y31178
ID Y31178 standard; peptide; 20 AA.
XX
AC Y31178;
XX
DT 28-OCT-1999 (first entry)
XX
DE Ubiquitin fusion protein GnRH mixed dimer 1.
XX
KW Ubiquitin; immunocastration; fusion protein; heat shock protein; epitope;
KW immune response stimulation; vaccine; T cell; viral; infection; cancer;
KW bacterial; parasitic; treatment; gastrointestinal disease; HIV infection;
KW pulmonary inflection; respiratory inflection; scaffold; anti-self; pig;
KW steridogenesis; gamete maturation; prostate; breast; castration; TNF;
KW tumour necrosis factor; septic shock; arthritis; Crohn's disease;
KW inflammatory bowel disease; ulcerative colitis; chorionic gonadotropin;
KW fertility; sperm protein; growth rate; antibody; detection; GnRH.
XX
OS Synthetic.
XX
PN WO9942472-A1.
XX
PD 26-AUG-1999.
XX
PF 26-JAN-1999; 99WO-US01588.
XX
PR 19-FEB-1998; 98US-0026276.
XX
PA (IGEN-) IGEN INT INC.
XX
PI Kenten JH, Lohnas GL, Pilon AL, Roberts SF, Tramontano A;
XX
DR WPI; 1999-518582/43.
XX

```
PT   Epitope-containing fusion proteins used to generate a highly
PT   specific immune responses
XX
PS   Example 3; Page 41; 67pp; English.
XX
CC   This invention describes a novel fusion protein, comprising a heat shock
CC   protein (e.g. ubiquitin), fused to an epitope(s) in a defined manner
CC   which is useful for the stimulation of a highly specific immune response
CC   when administered to an animal. The protein of the invention may be
CC   post-translationally modified (e.g. by the addition of fatty acids to
CC   enhance immunogenicity). The fusion proteins of the invention can be
CC   used as vaccines to induce an immune response. When a T cell epitope is
CC   attached, they can be used for control of viral infections, bacterial
CC   infections, parasitic infection and cancer. The fusion proteins can be
CC   used in pharmaceutical compositions for the treatment of gastrointestinal
CC   diseases, pulmonary inflections, respiratory inflections, and HIV
CC   infections. The use of ubiquitin as a scaffold is also useful for the
CC   presentation and stimulation of anti-self immune responses, e.g.
CC   generation of anti-gonadotropin releasing hormone antibodies which result
CC   in the suppression of luteinizing hormone and follicle stimulating
CC   hormone. This indirectly suppresses steridogenesis and gamete maturation
CC   in males and females. This type of anti-self response in humans is useful
CC   in the treatment of prostate cancer and breast cancer. In livestock, the
CC   ability to stimulate an anti-self response provides a simple alternative
CC   to physical castration. Immunocastration of pigs is a better alternative
CC   to physical castration, as it does not result in any of the detrimental
CC   side effects associated with physical castration. Other examples of
CC   diseases and conditions treated with self proteins fused with ubiquitin
CC   are TNF and its epitopes to modulate septic shock, arthritis,
CC   inflammatory bowel disease, Crohn's disease, and ulcerative colitis; Ig
CC   epsilon heavy chain for the control of allergic reactions; chorionic
CC   gonadotropin for fertility control; and sperm proteins for fertility
CC   control. A further use of the fusion proteins is as part of a vaccine to
CC   enhance growth rate and thereby the final weight of the livestock prior
CC   to shipment to market. In addition, the fusion proteins of the invention
CC   can be used to detect and identify antibodies from experimental samples.
CC   This sequence represents a GnRH mixed dimer used in the construction of
CC   a ubiquitin fusion protein described in the method of the invention.
XX
SQ   Sequence   20 AA;

  Query Match             89.2%;  Score 103.5;  DB 20;  Length 20;
  Best Local Similarity   94.7%;  Pred. No. 1.5e-08;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels    1;  Gaps    1;

Qy      2 HWSYGLRPGQHWS-GLRPG 19
          ||||||||||||| |||||
Db      2 hwsyglrpgqhwsyglrpg 20


RESULT   4
R07324
ID   R07324 standard; protein; 21 AA.
XX
AC   R07324;
XX
DT   29-JAN-1991  (first entry)
XX
DE   Luteinising hormone releasing hormone derived peptide.
XX
KW   LHRH; vaccine; meat; pigs; cancer; sterilisation.
XX
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Modified-site   1
FT                   /label=OTHER
FT                   /note="OTHER=pyroglutamic acid
FT   Modified-site   3
FT                   /label=OTHER
FT                   /note="OTHER= N-formyl-Trp (optional)"
FT   Modified-site   13
FT                   /label=OTHER
FT                   /note="OTHER= N-formyl-Trp (optional)"
FT   Misc-difference 21
FT                   /label=OTHER
FT                   /note="OTHER=Cys-NH2
XX
PN   WO9011298-A.
XX
PD   04-OCT-1990.
XX
PF   22-MAR-1990;   90WO-NL00037.
XX
PR   23-MAR-1989;   89NL-0000726.
XX
PA   (DIER-) STICHT CENT DIERGEN.
XX
PI   Meloen RH,  Wensing CJG;
XX
DR   WPI; 1990-320228/42.
XX
PT   Peptide for vaccinating mammals against LHRH - comprises at least
PT   two luteinising hormone releasing hormone sequences in tandem
XX
PS   Claim 4; Page 10; 15pp; English.
XX
CC   The peptide comprises at least 2 LHRH sequences in tandem.  The
CC   peptide can be used to vaccinate mammals (e.g. pigs) against LHRH.
CC   Such vaccination is used in human medicine for the treatment of
CC   prostate cancer and breast cancer and some forms of hypophyseal
CC   carcinoma.   Other applicns. include sterilisation of domestic
CC   animals and treatment of aggression in dogs.  A major use of the
CC   vaccination is to improve meat quality in pigs by avoiding "boar
CC   odour" associated with the meat of sexually mature pigs.
CC   See also R07323.
XX
SQ   Sequence   21 AA;

  Query Match             89.2%;  Score 103.5;  DB 11;  Length 21;
  Best Local Similarity   94.7%;  Pred. No. 1.6e-08;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels    1;  Gaps    1;

Qy      2 HWSYGLRPGQHWS-GLRPG 19
          ||||||||||||| |||||
Db      2 hwsyglrpgqhwsyglrpg 20


RESULT   5
R07323
ID   R07323 standard; peptide; 30 AA.
XX
AC   R07323;
XX
DT   29-JAN-1991  (first entry)
XX
DE   Luteinising hormone releasing hormone derived peptide.
XX
KW   LHRH; vaccine; meat; pigs; cancer; sterilisation.
XX
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 1
FT                   /label=OTHER
FT                   /note="OTHER=pyroglutamic acid or Gln having at
FT                         least one additional AA attached."
FT   Modified-site   3
FT                   /label=OTHER
FT                   /note="OTHER= N-formyl-Trp (optional)"
FT   Modified-site   13
FT                   /label=OTHER
FT                   /note="OTHER= N-formyl-Trp (optional)"
FT   Region          10..19
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FT /label=repeat
FT /note="repeat must occur at least once"
FT Misc-difference 30
FT /label=OTHER
FT /note="OTHER=Gly-NH2 or Gly having at
FT least one additional AA attached"
XX
PN WO9011298-A.
XX
PD 04-OCT-1990.
XX
PF 22-MAR-1990; 90WO-NL00037.
XX
PR 23-MAR-1989; 89NL-0000726.
XX
PA (DIER-) STICHT CENT DIERGEN.
XX
[redacted] Meloen RH, Wensing CJG;
XX
[redacted] WPI; 1990-320228/42.
XX
PT Peptide for vaccinating mammals against LHRH - comprises at least
PT two luteinising hormone releasing hormone sequences in tandem
XX
PS Claim 2; Page 10; 15pp; English.
XX
CC The peptide comprises at least 2 LHRH sequences in tandem. There
CC may be a spacer gp. between Gly(20) and Gln(21). The peptide can
CC be used to vaccinate mammals (e.g. pigs) against LHRH. Such
CC vaccination is used in human medicine for the treatment of prostate
CC cancer and breast cancer and some forms of hypophyseal carcinoma.
CC Other applicns. include sterilisation of domestic animals and
CC treatment of aggression in dogs. A major use of the vaccination is
CC to improve meat quality in pigs by avoiding "boar odour" associated
CC with the meat of sexually mature pigs.
CC See also R07323.
XX
SQ Sequence 30 AA;

Query Match 89.2%; Score 103.5; DB 11; Length 30;
Best Local Similarity 94.7%; Pred. No. 2.3e-08;
Matches 18; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

Qy 2 HWSYGLRPGQHWS-GLRPG 19
|||||||||||||| |||||
[redacted] 2 hwsyglrpgqhwsyglrpg 20

RESULT 6
Y31183
ID Y31183 standard; peptide; 40 AA.
XX
AC Y31183;
XX
DT 28-OCT-1999 (first entry)
XX
DE Ubiquitin fusion protein GnRH fragment 2.
XX
KW Ubiquitin; immunocastration; fusion protein; heat shock protein; epitope;
KW immune response stimulation; vaccine; T cell; viral; infection; cancer;
KW bacterial; parasitic; treatment; gastrointestinal disease; HIV infection;
KW pulmonary inflection; respiratory inflection; scaffold; anti-self; pig;
KW steridogenesis; gamete maturation; prostate; breast; castration; TNF;
KW tumour necrosis factor; septic shock; arthritis; Crohn's disease;
KW inflammatory bowel disease; ulcerative colitis; chorionic gonadotropin;
KW fertility; sperm protein; growth rate; antibody; detection; GnRH.
XX
OS Unidentified.
XX
PN WO9942472-A1.
XX
PD 26-AUG-1999.
XX
PF 26-JAN-1999; 99WO-US01588.
XX
PR 19-FEB-1998; 98US-0026276.
XX
PA (IGEN-) IGEN INT INC.
XX
PI Kenten JH, Lohnas GL, Pilon AL, Roberts SF, Tramontano A;
XX
DR WPI; 1999-518582/43.
XX
PT Epitope-containing fusion proteins used to generate a highly
PT specific immune responses
XX
PS Claim 83; Page 43; 67pp; English.
XX
CC This invention describes a novel fusion protein, comprising a heat shock
CC protein (e.g. ubiquitin), fused to an epitope(s) in a defined manner
CC which is useful for the stimulation of a highly specific immune response
CC when administered to an animal. The protein of the invention may be
CC post-translationally modified (e.g. by the addition of fatty acids to
CC enhance immunogenicity). The fusion proteins of the invention can be
CC used as vaccines to induce an immune response. When a T cell epitope is
CC attached, they can be used for control of viral infections, bacterial
CC infections, parasitic infection and cancer. The fusion proteins can be
CC used in pharmaceutical compositions for the treatment of gastrointestinal
CC diseases, pulmonary inflections, respiratory inflections, and HIV
CC infections. The use of ubiquitin as a scaffold is also useful for the
CC presentation and stimulation of anti-self immune responses, e.g.
CC generation of anti-gonadotropin releasing hormone antibodies which result
CC in the suppression of luteinizing hormone and follicle stimulating
CC hormone. This indirectly suppresses steridogenesis and gamete maturation
CC in males and females. This type of anti-self response in humans is useful
CC in the treatment of prostate cancer and breast cancer. In livestock, the
CC ability to stimulate an anti-self response provides a simple alternative
CC to physical castration. Immunocastration of pigs is a better alternative
CC to physical castration, as it does not result in any of the detrimental
CC side effects associated with physical castration. Other examples of
CC diseases and conditions treated with self proteins fused with ubiquitin
CC are TNF and its epitopes to modulate septic shock, arthritis,
CC inflammatory bowel disease, Crohn's disease, and ulcerative colitis; Ig
CC epsilon heavy chain for the control of allergic reactions; chorionic
CC gonadotropin for fertility control; and sperm proteins for fertility
CC control. A further use of the fusion proteins is as part of a vaccine to
CC enhance growth rate and thereby the final weight of the livestock prior
CC to shipment to market. In addition, the fusion proteins of the invention
CC can be used to detect and identify antibodies from experimental samples.
CC This sequence represents a GnRH fragment used in the construction of
CC a ubiquitin fusion protein described in the method of the invention.
XX
SQ Sequence 40 AA;

Query Match 89.2%; Score 103.5; DB 20; Length
Best Local Similarity 94.7%; Pred. No. 3.2e-08;
Matches 18; Conservative 0; Mismatches 0;

Qy 2 HWSYGLRPGQHWS-GLRPG 19
|||||||||||||| |||||
Db 2 hwsyglrpgqhwsyglrpg 20

RESULT 7
Y31182
ID Y31182 standard; peptide; 41 AA.
XX
AC Y31182;
XX
DT 28-OCT-1999 (first entry)
XX
DE Ubiquitin fusion protein C
XX
KW Ubiquitin; immunocastra

Page

KW immune response stimulation; vaccine; T cell; viral; infection; cancer;
KW bacterial; parasitic; treatment; gastrointestinal disease; HIV infection;
KW pulmonary inflection; respiratory inflection; scaffold; anti-self; pig;
KW steridogenesis; gamete maturation; prostate; breast; castration; TNF;
KW tumour necrosis factor; septic shock; arthritis; Crohn's disease;
KW inflammatory bowel disease; ulcerative colitis; chorionic gonadotropin;
KW fertility; sperm protein; growth rate; antibody; detection; GnRH.
XX
OS Unidentified.
XX
PN WO9942472-A1.
XX
PD 26-AUG-1999.
XX
PF 26-JAN-1999; 99WO-US01588.
XX
PR 19-FEB-1998; 98US-0026276.
XX
PA (IGEN-) IGEN INT INC.
XX
PI Kenten JH, Lohnas GL, Pilon AL, Roberts SF, Tramontano A;
XX
DR WPI; 1999-518582/43.
XX
PT Epitope-containing fusion proteins used to generate a highly
PT specific immune responses
XX
PS Claim 81; Page 43; 67pp; English.
XX
CC This invention describes a novel fusion protein, comprising a heat shock
CC protein (e.g. ubiquitin), fused to an epitope(s) in a defined manner
CC which is useful for the stimulation of a highly specific immune response
CC when administered to an animal. The protein of the invention may be
CC post-translationally modified (e.g. by the addition of fatty acids to
CC enhance immunogenicity). The fusion proteins of the invention can be
CC used as vaccines to induce an immune response. When a T cell epitope is
CC attached, they can be used for control of viral infections, bacterial
CC infections, parasitic infection and cancer. The fusion proteins can be
CC used in pharmaceutical compositions for the treatment of gastrointestinal
CC diseases, pulmonary inflections, respiratory inflections, and HIV
CC infections. The use of ubiquitin as a scaffold is also useful for the
CC presentation and stimulation of anti-self immune responses, e.g.
CC generation of anti-gonadotropin releasing hormone antibodies which result
CC in the suppression of luteinizing hormone and follicle stimulating
CC hormone. This indirectly suppresses steridogenesis and gamete maturation
CC in males and females. This type of anti-self response in humans is useful
CC in the treatment of prostate cancer and breast cancer. In livestock, the
CC ability to stimulate an anti-self response provides a simple alternative
CC to physical castration. Immunocastration of pigs is a better alternative
CC to physical castration, as it does not result in any of the detrimental
CC side effects associated with physical castration. Other examples of
CC diseases and conditions treated with self proteins fused with ubiquitin
CC are TNF and its epitopes to modulate septic shock, arthritis,
CC inflammatory bowel disease, Crohn's disease, and ulcerative colitis; Ig
CC epsilon heavy chain for the control of allergic reactions; chorionic
CC gonadotropin for fertility control; and sperm proteins for fertility
CC control. A further use of the fusion proteins is as part of a vaccine to
CC enhance growth rate and thereby the final weight of the livestock prior
CC to shipment to market. In addition, the fusion proteins of the invention
CC can be used to detect and identify antibodies from experimental samples.
CC This sequence represents a GnRH fragment used in the construction of
CC a ubiquitin fusion protein described in the method of the invention.
XX
SQ Sequence 41 AA;

Query Match 89.2%; Score 103.5; DB 20; Length 41;
Best Local Similarity 94.7%; Pred. No. 3.3e-08;
Matches 18; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

Qy 2 HWSYGLRPGQHWS-GLRPG 19
||||||||||||| |||||
Db 2 hwsyglrpgqhwsyglrpg 20

RESULT 8
B20865
ID B20865 standard; peptide; 42 AA.
XX
AC B20865;
XX
DT 03-JAN-2001 (first entry)
XX
DE GnRH tandem dimer peptide sequence SEQ ID NO:3.
XX
KW Gonadotropin releasing hormone; GnRH; immunogen; Protein D; carrier;
KW prostate cancer; Haemophilus influenzae; vaccine; infectious disease;
KW malaria; cytostatic; antiallergic; nootropic; neuroprotective;
KW protozoacide; Alzheimer's disease; allergy.
XX
OS Homo sapiens.
XX
FH Key Location/Qualifiers
FT Modified-site 42
FT /note= "amidated"
XX
PN WO200050077-A1.
XX
PD 31-AUG-2000.
XX
PF 22-FEB-2000; 2000WO-EP01457.
XX
PR 25-FEB-1999; 99GB-0004405.
PR 25-FEB-1999; 99GB-0004408.
PR 25-FEB-1999; 99GB-0004412.
PR 13-AUG-1999; 99GB-0019260.
XX
PA (SMIK) SMITHKLINE BEECHAM BIOLOGICALS.
XX
PI Coste M, Lobet Y, Van-Mechelen MP, Verriest C;
XX
DR WPI; 2000-572040/53.
XX
PT Immunogens and vaccine comprising the immunogen useful for preventing
PT and treating infectious diseases e.g. malaria and chronic disease e.g.
PT cancer, comprises peptide and carrier from protein D of influenzae -
XX
PS Disclosure; Page 7; 53pp; English.
XX
CC The present invention describes an immunogen (I) comprising a peptide
CC (Ia) and a carrier (Ib) derived from protein D of Haemophilus influenzae
CC or its fragment. Also described are: (1) a vaccine comprising (I), and
CC an excipient; (2) preparation of (I), comprising conjugating a peptide
CC to protein D or its fragment; and (3) preparation of a vaccine of (1),
CC comprising formulating (I) with an excipient. (I) has cytostatic,
CC antiallergic, nootropic, neuroprotective and protozoacide activities.
CC (I) and the vaccine are useful for the manufacture of a medicament for
CC preventing and treating infectious diseases such as malaria or chronic
CC disease such as cancer, Alzheimer's disease or allergy in a patient.
CC Unlike prior art immunogens, (I) induces high levels of antipeptide
CC immune responses while inducing a moderate humoral response against the
CC carrier. The present sequence represents an example of an immunogen from
CC the present invention which contains gonadotropin releasing hormone
CC (GnRH) tandem dimers.
XX
SQ Sequence 42 AA;

Query Match 89.2%; Score 103.5; DB 21; Length 42;
Best Local Similarity 94.7%; Pred. No. 3.4e-08;
Matches 18; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

Qy 2 HWSYGLRPGQHWS-GLRPG 19
||||||||||||| |||||
Db 2 hwsyglrpgqhwsyglrpg 20

RESULT 9
Y31177
ID Y31177 standard; peptide; 20 AA.
XX
AC Y31177;
XX
DT 28-OCT-1999 (first entry)
XX
DE Ubiquitin fusion protein GnRH dimer.
XX
KW Ubiquitin; immunocastration; fusion protein; heat shock protein; epitope;
KW immune response stimulation; vaccine; T cell; viral; infection; cancer;
KW bacterial; parasitic; treatment; gastrointestinal disease; HIV infection;
KW pulmonary inflection; respiratory inflection; scaffold; anti-self; pig;
KW steridogenesis; gamete maturation; prostate; breast; castration; TNF;
KW tumour necrosis factor; septic shock; arthritis; Crohn's disease;
KW inflammatory bowel disease; ulcerative colitis; chorionic gonadotropin;
KW fertility; sperm protein; growth rate; antibody; detection; GnRH.
XX
OS Synthetic.
XX
PN WO9942472-A1.
XX
PD 26-AUG-1999.
XX
PF 26-JAN-1999; 99WO-US01588.
XX
PR 19-FEB-1998; 98US-0026276.
XX
PA (IGEN-) IGEN INT INC.
XX
PI Kenten JH, Lohnas GL, Pilon AL, Roberts SF, Tramontano A;
XX
DR WPI; 1999-518582/43.
XX
PT Epitope-containing fusion proteins used to generate a highly
PT specific immune responses
XX
PS Example 3; Page 41; 67pp; English.
XX
CC This invention describes a novel fusion protein, comprising a heat shock
CC protein (e.g. ubiquitin), fused to an epitope(s) in a defined manner
CC which is useful for the stimulation of a highly specific immune response
CC when administered to an animal. The protein of the invention may be
CC post-translationally modified (e.g. by the addition of fatty acids to
CC enhance immunogenicity). The fusion proteins of the invention can be
CC used as vaccines to induce an immune response. When a T cell epitope is
CC attached, they can be used for control of viral infections, bacterial
CC infections, parasitic infection and cancer. The fusion proteins can be
CC used in pharmaceutical compositions for the treatment of gastrointestinal
CC diseases, pulmonary inflections, respiratory inflections, and HIV
CC infections. The use of ubiquitin as a scaffold is also useful for the
CC presentation and stimulation of anti-self immune responses, e.g.
CC generation of anti-gonadotropin releasing hormone antibodies which result
CC in the suppression of luteinizing hormone and follicle stimulating
CC hormone. This indirectly suppresses steridogenesis and gamete maturation
CC in males and females. This type of anti-self response in humans is useful
CC in the treatment of prostate cancer and breast cancer. In livestock, the
CC ability to stimulate an anti-self response provides a simple alternative
CC to physical castration. Immunocastration of pigs is a better alternative
CC to physical castration, as it does not result in any of the detrimental
CC side effects associated with physical castration. Other examples of
CC diseases and conditions treated with self proteins fused with ubiquitin
CC are TNF and its epitopes to modulate septic shock, arthritis,
CC inflammatory bowel disease, Crohn's disease, and ulcerative colitis; Ig
CC epsilon heavy chain for the control of allergic reactions; chorionic
CC gonadotropin for fertility control; and sperm proteins for fertility
CC control. A further use of the fusion proteins is as part of a vaccine to
CC enhance growth rate and thereby the final weight of the livestock prior
CC to shipment to market. In addition, the fusion proteins of the invention
CC can be used to detect and identify antibodies from experimental samples.
CC This sequence represents a GnRH dimer used in the construction of
CC a ubiquitin fusion protein described in the method of the invention.
XX
SQ Sequence 20 AA;

Query Match 86.6%; Score 100.5; DB 20; Length 20;
Best Local Similarity 89.5%; Pred. No. 4e-08;
Matches 17; Conservative 1; Mismatches 0; Indels 1; Gaps 1;

Qy 2 HWSYGLRPGQHWS-GLRPG 19
||||||||||:||| |||||
Db 2 hwsyglrpgehwsyglrpg 20

RESULT 10
Y31179
ID Y31179 standard; peptide; 20 AA.
XX
AC Y31179;
XX
DT 28-OCT-1999 (first entry)
XX
DE Ubiquitin fusion protein GnRH mixed dimer 2.
XX
KW Ubiquitin; immunocastration; fusion protein; heat shock protein; epitope;
KW immune response stimulation; vaccine; T cell; viral; infection; cancer;
KW bacterial; parasitic; treatment; gastrointestinal disease; HIV infection;
KW pulmonary inflection; respiratory inflection; scaffold; anti-self; pig;
KW steridogenesis; gamete maturation; prostate; breast; castration; TNF;
KW tumour necrosis factor; septic shock; arthritis; Crohn's disease;
KW inflammatory bowel disease; ulcerative colitis; chorionic gonadotropin;
KW fertility; sperm protein; growth rate; antibody; detection; GnRH.
XX
OS Synthetic.
XX
PN WO9942472-A1.
XX
PD 26-AUG-1999.
XX
PF 26-JAN-1999; 99WO-US01588.
XX
PR 19-FEB-1998; 98US-0026276.
XX
PA (IGEN-) IGEN INT INC.
XX
PI Kenten JH, Lohnas GL, Pilon AL, Roberts SF, Tramontano A;
XX
DR WPI; 1999-518582/43.
XX
PT Epitope-containing fusion proteins used to generate a highly
PT specific immune responses
XX
PS Example 3; Page 41; 67pp; English.
XX
CC This invention describes a novel fusion protein, com
CC protein (e.g. ubiquitin), fused to an epitope(s)
CC which is useful for the stimulation of a high
CC when administered to an animal. The protein
CC post-translationally modified (e.g. by the
CC enhance immunogenicity). The fusion prote
CC used as vaccines to induce an immune re
CC attached, they can be used for control
CC infections, parasitic infection and
CC used in pharmaceutical compositions
CC diseases, pulmonary inflections,
CC infections. The use of ubiquitin
CC presentation and stimulation of
CC generation of anti-gonadotrop
CC in the suppression of lutei
CC hormone. This indirectly s
CC in males and females. Thi
CC in the treatment of pro
CC ability to stimulate

CC to physical castration. Immunocastration of pigs is a better alternative
CC to physical castration, as it does not result in any of the detrimental
CC side effects associated with physical castration. Other examples of
CC diseases and conditions treated with self proteins fused with ubiquitin
CC are TNF and its epitopes to modulate septic shock, arthritis,
CC inflammatory bowel disease, Crohn's disease, and ulcerative colitis; Ig
CC epsilon heavy chain for the control of allergic reactions; chorionic
CC gonadotropin for fertility control; and sperm proteins for fertility
CC control. A further use of the fusion proteins is as part of a vaccine to
CC enhance growth rate and thereby the final weight of the livestock prior
CC to shipment to market. In addition, the fusion proteins of the invention
CC can be used to detect and identify antibodies from experimental samples.
CC This sequence represents a GnRH mixed dimer used in the construction of
CC a ubiquitin fusion protein described in the method of the invention.
XX
SQ Sequence 20 AA;

Query Match 86.6%; Score 100.5; DB 20; Length 20;
Best Local Similarity 89.5%; Pred. No. 4e-08;
Matches 17; Conservative 1; Mismatches 0; Indels 1; Gaps 1;

Qy 2 HWSYGLRPGQHWS-GLRPG 19
||||||||:||| |||||
Db 2 hwsyglrpgehwsyglrpg 20

RESULT 11
Y96085
ID Y96085 standard; Protein; 40 AA.
XX
AC Y96085;
XX
DT 19-DEC-2000 (first entry)
XX
DE Cattle gonadotropin releasing hormone tetramer.
XX
KW Gonadotropin releasing hormone; GnRH; cattle; vaccine;
KW dual immune response; immunogen; fertility; aggression;
KW contraceptive.
XX
OS Bos taurus.
XX
FH Key Location/Qualifiers
FT Peptide 1..10
FT /label= GnRH
FT Peptide 11..20
FT /label= GnRH
FT Peptide 21..30
FT /label= GnRH
FT Peptide 31..40
FT /label= GnRH
XX
PN EP1035133-A2.
XX
PD 13-SEP-2000.
XX
PF 14-FEB-2000; 2000EP-0301103.
XX
PR 17-FEB-1999; 99US-0120454.
XX
PA (PFIZ) PFIZER PROD INC.
XX
PI Campos M, Martinod SR, Durtschi BA, Yule TD;
XX
DR WPI; 2000-566924/53.
DR N-PSDB; A50548.
XX
PT Novel fusion protein for producing a dual immune response comprises a
PT peptide analogous to an endogenous peptide which is to be inhibited,
PT connected to a peptide analogous to an immunogen from a pathogen which
PT infects a vertebrate -
XX
PS Disclosure; Fig 2; 93pp; English.
XX
CC The present sequence represents a cattle gonadotropin releasing
CC hormone (GnRH) tetramer, i.e. comprising 4 repeats of the GnRH
CC native decapeptide (see Y96084). DNA (see A50548) encoding the
CC tetramer was obtained by the annealing and cloning of GnRH-encoding
CC oligonucleotides (see A50541-47). GnRH tetramer constructs were
CC utilised in the novel fusion proteins of the invention also
CC comprising a bovine herpesvirus type 1 (BHV-1) antigen. These
CC fusion proteins (see Y96089-91 and Y96093) are used as vaccines,
CC producing a dual immune response that is effective in inhibiting
CC sexual characteristics in cattle and also in protecting against
CC BHV-1, a causative agent of bovine respiratory disease. Sexual
CC characteristics that can be inhibited include agression in males,
CC and fertility in males and females, the latter providing a means of
CC contraception.
XX
SQ Sequence 40 AA;

Query Match 86.6%; Score 100.5; DB 21; Length 40;
Best Local Similarity 89.5%; Pred. No. 8.6e-08;
Matches 17; Conservative 1; Mismatches 0; Indels 1; Gaps 1;

Qy 2 HWSYGLRPGQHWS-GLRPG 19
||||||||:||| |||||
Db 2 hwsyglrpgehwsyglrpg 20

RESULT 12
R11185
ID R11185 standard; Protein; 263 AA.
XX
AC R11185;
XX
DT 22-MAY-1991 (first entry)
XX
DE Plasmid pBTA870-encoded TraTp-multiple LHRH analogue fusion.
XX
KW TraT protein; Leutinizing hormone releasing hormone; fusion protein;
KW immunological castration.
XX
FH Key Location/Qualifiers
FT Peptide 1..20
FT /label= TraTp signal
FT Peptide 201..220
FT /label= two copies of LHRH analogue
XX
PN WO9102799-A.
XX
PD 07-MAR-1991.
XX
PF 24-AUG-1990; 90WO-AU00373.
XX
PR 25-AUG-1989; 89AU-0005979.
XX
PA (BIOT-) BIOTECHN AUST PTY L.
XX
PI Russell-Jones GJ, Stewart AG, Tsonis CG;
XX
DR WPI; 1991-087282/12.
DR N-PSDB; Q11019.
XX
PT Fusion proteins comprising LHRH analogue and TraTp (analogue) -
PT useful in vaccine for inhibition or control of reproduction in
PT vertebrates, esp. domestic animals
XX
PS Example 1; Fig 2 and 5; 53pp; English.
XX
CC Plasmid pBTA870 is a TraTp-LHRH analogue fusion in which two copies
CC of an LHRH analogue have been inserted between amino acids 200 and
CC 201 of TraTp (Ogata R.T. et al., (1982) J.Bacteriol. 151:819-827).
CC The plasmid was constructed by inserting DNA encoding the LHRH

```
CC   analogue into the SmaI site of pBTA733 (see Q11015) which all ready
CC   carries one copy of the LHRH sequence. After transformation,
CC   colonies with two LHRH molecules are identified. Fusion proteins
CC   with multiple inserts generated a higher anti-LHRH response (as
CC   measured by the binding of (125)I-LHRH at a serum dilution of
CC   1:2000 final) than constructs with a single insert, in outbred mice
CC   and dogs. The fusion proteins can be used to inhibit reproductive
CC   functions in vertebrates.
CC   See also Q10995, Q10997-Q11000, Q11014-8, Q11020-Q11021.
XX
SQ   Sequence   263 AA;


  Query Match             86.6%;  Score 100.5;  DB 12;  Length 263;
  Best Local Similarity   89.5%;  Pred. No. 6.8e-07;
  Matches   17;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy       2 HWSYGLRPGQHWS-GLRPG 19
           |||||||||:||| |||||
Db     202 hwsyglrpgehwsyglrpg 220


RESULT  13
R11186
ID   R11186 standard; Protein; 283 AA.
XX
AC   R11186;
XX
DT   22-MAY-1991  (first entry)
XX
DE   Plasmid pBTA862-encoded TraTp-multiple LHRH analogue fusion.
XX
KW   TraT protein; Leutinizing hormone releasing hormone; fusion protein;
KW   immunological castration.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1..20
FT                   /label= TraTp signa;
FT   Peptide         201..240
FT                   /label= four LHRH analogues in tandem repeat
XX
PN   WO9102799-A.
XX
PD   07-MAR-1991.
XX
PF   24-AUG-1990;   90WO-AU00373.
XX
PR   25-AUG-1989;   89AU-0005979.
XX
PA   (BIOT-) BIOTECHN AUST PTY L.
XX
PI   Russell-Jones GJ,  Stewart AG,  Tsonis CG;
XX
DR   WPI; 1991-087282/12.
DR   N-PSDB; Q11020.
XX
PT   Fusion proteins comprising LHRH analogue and TraTp (analogue) -
PT   useful in vaccine for inhibition or control of reproduction in
PT   vertebrates, esp. domestic animals
XX
PS   Example 1; Fig 2 and 5; 53pp; English.
XX
CC   Plasmid pBTA862 is a TraTp-LHRH analogue fusion in which four copies
CC   of an LHRH analogue have been inserted between amino acids 200 and
CC   201 of TraTp (Ogata R.T. et al., (1982) J.Bacteriol. 151:819-827).
CC   The  plasmid was constructed by inserting DNA coding for a dimer of
CC   LHRH analogue into the SmaI site of pBTA870 (see Q11019) which all
CC   ready carries two copies of the LHRH sequence. After transformation,
CC   colonies with 4 LHRH molecules were identified. Fusion proteins
CC   with multiple inserts generated a higher anti-LHRH response (as
CC   measured by the binding of (125)I-LHRH at a serum dilution of
CC   1:2000 final) than constructs with a single insert, in outbred mice
CC   and dogs. The fusion proteins can be used to inhibit reproductive
CC   functions in vertebrates.
CC   See also Q10995, Q10997-Q11000, Q11014-9, Q11021.
XX
SQ   Sequence   283 AA;


  Query Match             86.6%;  Score 100.5;  DB 12;  Length 283;
  Best Local Similarity   89.5%;  Pred. No. 7.4e-07;
  Matches   17;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy       2 HWSYGLRPGQHWS-GLRPG 19
           |||||||||:||| |||||
Db     212 hwsyglrpgehwsyglrpg 230


RESULT  14
R11187
ID   R11187 standard; Protein; 323 AA.
XX
AC   R11187;
XX
DT   22-MAY-1991  (first entry)
XX
DE   Plasmid pBTA859-encoded TraTp-multiple LHRH analogue fusion.
XX
KW   TraT protein; Leutinizing hormone releasing hormone; fusion protein;
KW   immunological castration.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1..20
FT                   /label= TraTp signal
FT   Peptide         201..280
FT                   /label= 8 LHRH analogues in tandem repeat
XX
PN   WO9102799-A.
XX
PD   07-MAR-1991.
XX
PF   24-AUG-1990;   90WO-AU00373.
XX
PR   25-AUG-1989;   89AU-0005979.
XX
PA   (BIOT-) BIOTECHN AUST PTY L.
XX
PI   Russell-Jones GJ,  Stewart AG,  Tsonis CG;
XX
DR   WPI; 1991-087282/12.
DR   N-PSDB; Q11021.
XX
PT   Fusion proteins comprising LHRH analogue and TraTp (analogue) -
PT   useful in vaccine for inhibition or control of reproduction in
PT   vertebrates, esp. domestic animals
XX
PS   Example 1; Fig 2 and 5; 53pp; English.
XX
CC   Plasmid pBTA859 is a TraTp-LHRH analogue fusion in which 8 copies
CC   of an LHRH analogue have been inserted between amino acids 200 and
CC   201 of TraTp (Ogata R.T. et al., (1982) J.Bacteriol. 151:819-827).
CC   The  plasmid was constructed by two successive additions of DNA
CC   coding for a dimer of LHRH analogue into the SmaI site of pBTA862
CC   (see Q11020) which all ready carries four copies of the LHRH
CC   sequence. After transformation, colonies with 8 LHRH molecules were
CC   identified. Fusion proteins with multiple inserts generated a higher
CC   anti-LHRH response (as measured by the binding of (125)I-LHRH at a
CC   serum dilution of 1:2000 final) than constructs with a single
CC   insert, in outbred mice and dogs. The fusion proteins can be used to
CC   inhibit reproductive functions in vertebrates.
CC   See also Q10995, Q10997-Q11000, Q11014-Q11020.
XX
SQ   Sequence   323 AA;


  Query Match             86.6%;  Score 100.5;  DB 12;  Length 323;
```

```
  Best Local Similarity   89.5%;  Pred. No. 8.6e-07;
  Matches   17;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy       2 HWSYGLRPGQHWS-GLRPG 19
           |||||||||:||| |||||
Db     202 hwsyglrpgehwsyglrpg 220


RESULT  15
Y96090
ID   Y96090 standard; Protein; 398 AA.
XX
AC   Y96090;
XX
DT   19-DEC-2000  (first entry)
XX
DE   BHV-1 truncated gD-GnRH tetramer fusion.
XX
KW   BHV-1; glycoprotein D; tmgD; antigen; bovine respiratory disease;
KW   gonadotropin releasing hormone; GnRH; cattle; vaccine;
KW   dual immune response; immunogen; agression; fertility;
KW   contraceptive; plasmid pQE-gD:GnRH.
XX
OS   Chimeric - Bovine herpesvirus type 1.
OS   Chimeric - Bos taurus.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1..15
FT                   /label= 6XHis_leader
FT   Protein         16..358
FT                   /label= tmgD
FT   Protein         359..398
FT                   /label= 4GnRH
XX
PN   EP1035133-A2.
XX
PD   13-SEP-2000.
XX
PF   14-FEB-2000; 2000EP-0301103.
XX
PR   17-FEB-1999;   99US-0120454.
XX
PA   (PFIZ ) PFIZER PROD INC.
XX
PI   Campos M,  Martinod SR,  Durtschi BA,  Yule TD;
XX
DR   WPI; 2000-566924/53.
DR   N-PSDB; A50553.
XX
PT   Novel fusion protein for producing a dual immune response comprises a
PT   peptide analogous to an endogenous peptide which is to be inhibited,
PT   connected to a peptide analogous to an immunogen from a pathogen which
PT   infects a vertebrate  -
XX
PS   Example 1; Fig 8A-D; 93pp; English.
XX
CC   The present sequence is that of a tmgD-4GnRH fusion protein encoded
CC   by a nucleotide insert (see A50553) of plasmid pQE-gD:GnRH.  It
CC   comprises a bovine herpes virus type 1 (BHV-1) truncated mature
CC   glycoprotein D (tmdD) antigen joined at the C-terminus to a bovine
CC   gonadotropin releasing hormone (GnRH) tetramer.  There is also an
CC   N-terminal 6XHis leader peptide.  tmgD-4GnRH is an example of fusion
CC   proteins of the invention comprising: a first protein analogous to
CC   a protein endogenously synthesized within a vertebrate, the activity
CC   of which is to be inhibited within the vertebrate, and which is
CC   incapable by itself of eliciting an effective immunoinhibitory
CC   response in the vertebrate; and a second protein, which is an
CC   immunogen from a pathogen capable of infecting the vertebrate, and
CC   which causes the vertebrate's immune system to recognise the first
CC   protein, producing a response that inhibits the activity of the
CC   first protein, and also protecting the vertebrate from infection
CC   by the pathogen when the vertebrate is vaccinated with the fusion
CC   protein.  In the present case, the tmgD-4GnRH fusion protein
CC   elicits a dual immune response that is effective in inhibiting
CC   sexual characteristics (e.g. aggressive behaviour in males, and
CC   fertility in males and females, the latter providing a means of
CC   contraception) in cattle, and also in protecting against infection
CC   by BHV-1, a causative agent of bovine respiratory disease.
XX
SQ   Sequence   398 AA;


  Query Match             86.6%;  Score 100.5;  DB 21;  Length 398;
  Best Local Similarity   89.5%;  Pred. No. 1.1e-06;
  Matches   17;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy       2 HWSYGLRPGQHWS-GLRPG 19
           |||||||||:||| |||||
Db     360 hwsyglrpgehwsyglrpg 378


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GenCore version 4.5

OM protein - protein search, using sw model

Run on: May 25, 2001, 15:32:12 ; Search time 11.62 Seconds
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33.065 Million cell updates/sec

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Perfect score: 116
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Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 185757 seqs, 19210857 residues

Total number of hits satisfying chosen parameters: 185757

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

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6: /cgn2_6/ptodata/2/iaa/backfiles1.pep:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	100.5	86.6	24	1	US-07-690-983D-43	Sequence 43, Appl
2	100.5	86.6	44	1	US-07-690-983D-45	Sequence 45, Appl
3	100.5	86.6	52	3	US-08-458-814-6	Sequence 6, Appli
4	100.5	86.6	55	3	US-08-458-814-7	Sequence 7, Appli
5	100.5	86.6	84	1	US-07-690-983D-47	Sequence 47, Appl
6	94.5	81.5	20	1	US-07-690-983D-40	Sequence 40, Appl
7	86	74.1	699	2	US-08-694-865-16	Sequence 16, Appl
8	86	74.1	699	3	US-09-124-491-16	Sequence 16, Appl
9	85.5	73.7	49	1	US-08-387-156-4	Sequence 4, Appli
10	85.5	73.7	49	2	US-08-694-865-4	Sequence 4, Appli
11	85.5	73.7	49	2	US-08-878-748-4	Sequence 4, Appli
12	85.5	73.7	49	3	US-09-124-491-4	Sequence 4, Appli
13	85.5	73.7	544	1	US-08-387-156-10	Sequence 10, Appl
14	85.5	73.7	544	2	US-08-694-865-10	Sequence 10, Appl
15	85.5	73.7	544	2	US-08-878-748-10	Sequence 10, Appl
16	85.5	73.7	544	3	US-09-124-491-10	Sequence 10, Appl
17	85.5	73.7	977	1	US-08-387-156-8	Sequence 8, Appli
18	85.5	73.7	977	2	US-08-694-865-8	Sequence 8, Appli
19	85.5	73.7	977	2	US-08-878-748-8	Sequence 8, Appli
20	85.5	73.7	977	3	US-09-124-491-8	Sequence 8, Appli
21	68	58.6	17	1	US-07-690-983D-16	Sequence 16, Appl
22	59	50.9	16	1	US-08-188-223-2	Sequence 2, Appli
23	59	50.9	16	4	US-08-968-466-2	Sequence 2, Appli
24	58	50.0	10	1	US-07-714-540-9	Sequence 9, Appli
25	58	50.0	10	1	US-07-690-983D-2	Sequence 2, Appli
26	58	50.0	10	1	US-07-690-983D-32	Sequence 32, Appl
27	58	50.0	10	1	US-08-103-022-1	Sequence 1, Appli
28	58	50.0	10	1	US-08-184-935-6	Sequence 6, Appli
29	58	50.0	10	1	US-08-343-883-1	Sequence 1, Appli
30	58	50.0	10	1	US-08-000-931-5	Sequence 5, Appli
31	58	50.0	10	1	US-08-428-488-22	Sequence 22, Appl
32	58	50.0	10	1	US-08-341-219-11	Sequence 11, Appl
33	58	50.0	10	1	US-08-453-588-2	Sequence 2, Appli
34	58	50.0	10	1	US-08-453-588-4	Sequence 4, Appli
35	58	50.0	10	1	US-08-453-588-6	Sequence 6, Appli
36	58	50.0	10	1	US-08-453-588-8	Sequence 8, Appli
37	58	50.0	10	1	US-08-453-588-10	Sequence 10, Appl
38	58	50.0	10	1	US-08-453-588-12	Sequence 12, Appl
39	58	50.0	10	1	US-08-453-588-14	Sequence 14, Appl
40	58	50.0	10	1	US-08-453-588-16	Sequence 16, Appl
41	58	50.0	10	1	US-08-453-588-19	Sequence 19, Appl
42	58	50.0	10	1	US-08-453-588-22	Sequence 22, Appl
43	58	50.0	10	1	US-08-188-223-3	Sequence 3, Appli
44	58	50.0	10	1	US-08-406-935-5	Sequence 5, Appli
45	58	50.0	10	4	US-09-317-125-2	Sequence 2, Appli

ALIGNMENTS

```
RESULT   1
US-07-690-983D-43
; Sequence 43, Application US/07690983D
; Patent No. 5403586
;  GENERAL INFORMATION:
;    APPLICANT:  RUSSELL-JONES, Gregory J.
;    APPLICANT:  STEWART, Andrew G.
;    APPLICANT:  TSONIS, Con G.
;    TITLE OF INVENTION:  FUSION PROTEINS
;    NUMBER OF SEQUENCES:  47
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Foley & Lardner
;      STREET:  3000 K Street, N.W.
;      CITY:  Washington, D.C.
;      COUNTRY:  USA
;      ZIP:  20007-5109
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/07/690,983D
;      FILING DATE:  25-JUN-1991
;      CLASSIFICATION:  435
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  PCT/AU90/00373
;      FILING DATE:  24-AUG-1990
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  BENT, Stephen A.
;      REGISTRATION NUMBER:  29,768
;      REFERENCE/DOCKET NUMBER:  16786/148 CHAC
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (202)672-5300
;      TELEFAX:  (202)672-5399
;  INFORMATION FOR SEQ ID NO:  43:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  24 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-07-690-983D-43


  Query Match            86.6%;  Score 100.5;  DB 1;  Length 24;
  Best Local Similarity  89.5%;  Pred. No. 2.5e-08;
  Matches   17;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy       2 HWSYGLRPGQHWS-GLRPG 19
           |||||||||:||| ||||
```

```
Db      4 HWSYGLRPGEHWSYGLRPG 22


RESULT   2
US-07-690-983D-45
; Sequence 45, Application US/07690983D
; Patent No. 5403586
;  GENERAL INFORMATION:
;    APPLICANT:  RUSSELL-JONES, Gregory J.
;    APPLICANT:  STEWART, Andrew G.
;    APPLICANT:  TSONIS, Con G.
;    TITLE OF INVENTION:  FUSION PROTEINS
;    NUMBER OF SEQUENCES:  47
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Foley & Lardner
;      STREET:  3000 K Street, N.W.
;      CITY:  Washington, D.C.
;      COUNTRY:  USA
;      ZIP:  20007-5109
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/07/690,983D
;      FILING DATE:  25-JUN-1991
;      CLASSIFICATION:  435
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  PCT/AU90/00373
;      FILING DATE:  24-AUG-1990
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  BENT, Stephen A.
;      REGISTRATION NUMBER:  29,768
;      REFERENCE/DOCKET NUMBER:  16786/148 CHAC
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (202)672-5300
;      TELEFAX:  (202)672-5399
;  INFORMATION FOR SEQ ID NO:  45:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  44 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-07-690-983D-45


  Query Match             86.6%;  Score 100.5;  DB 1;  Length 44;
  Best Local Similarity   89.5%;  Pred. No. 4.8e-08;
  Matches   17;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy      2 HWSYGLRPGQHWS-GLRPG 19
          |||||||||:||| |||||
Db      4 HWSYGLRPGEHWSYGLRPG 22


RESULT   3
US-08-458-814-6
; Sequence 6, Application US/08458814
; Patent No. 6103243
;  GENERAL INFORMATION:
;    APPLICANT:  RUSSELL-JONES, Gregory J
;    APPLICANT:  DE AIZPURUA, Henry J
;    APPLICANT:  HOWE, Peter
;    APPLICANT:  RAND, Keith N
;    TITLE OF INVENTION:  ORAL VACCINES
;    NUMBER OF SEQUENCES:  12
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Foley & Lardner
;      STREET:  3000 K Street, N.W.
;      CITY:  Washington
;      STATE:  D.C.
;      COUNTRY:  USA
;      ZIP:  20007-5109
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/458,814
;      FILING DATE:  02-JUN-1995
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 08/327,822
;      FILING DATE:  18-OCT-1994
;      CLASSIFICATION:  424
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  PCT/AU86/00135
;      FILING DATE:  14-MAY-1986
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  AU PH3104
;      FILING DATE:  25-OCT-1985
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  AU PH0566
;      FILING DATE:  15-MAY-1985
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  BENT, Stephen A
;      REGISTRATION NUMBER:  29,768
;      REFERENCE/DOCKET NUMBER:  60042/155/BIAU
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  202 672 5300
;      TELEFAX:  202 672 5399
;      TELEX:  904136
;  INFORMATION FOR SEQ ID NO:  6:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  52 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-458-814-6


  Query Match             86.6%;  Score 100.5;  DB 3;  Length 52;
  Best Local Similarity   89.5%;  Pred. No. 5.8e-08;
  Matches   17;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy      2 HWSYGLRPGQHWS-GLRPG 19
          |||||||||:||| |||||
Db     17 HWSYGLRPGEHWSYGLRPG 35


RESULT   4
US-08-458-814-7
; Sequence 7, Application US/08458814
; Patent No. 6103243
;  GENERAL INFORMATION:
;    APPLICANT:  RUSSELL-JONES, Gregory J
;    APPLICANT:  DE AIZPURUA, Henry J
;    APPLICANT:  HOWE, Peter
;    APPLICANT:  RAND, Keith N
;    TITLE OF INVENTION:  ORAL VACCINES
;    NUMBER OF SEQUENCES:  12
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Foley & Lardner
;      STREET:  3000 K Street, N.W.
;      CITY:  Washington
;      STATE:  D.C.
;      COUNTRY:  USA
;      ZIP:  20007-5109
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/458,814
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;       FILING DATE:  02-JUN-1995
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 08/327,822
;       FILING DATE:  18-OCT-1994
;       CLASSIFICATION:  424
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  PCT/AU86/00135
;       FILING DATE:  14-MAY-1986
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  AU PH3104
;       FILING DATE:  25-OCT-1985
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  AU PH0566
;       FILING DATE:  15-MAY-1985
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  BENT, Stephen A
;       REGISTRATION NUMBER:  29,768
;       REFERENCE/DOCKET NUMBER:  60042/155/BIAU
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  202 672 5300
;       TELEFAX:  202 672 5399
;       TELEX:  904136
;     INFORMATION FOR SEQ ID NO:  7:
;       SEQUENCE CHARACTERISTICS:
;       LENGTH:  55 amino acids
;       TYPE:  amino acid
;       STRANDEDNESS:
;       TOPOLOGY:  unknown
;     MOLECULE TYPE:  peptide
US-08-458-814-7


  Query Match             86.6%;  Score 100.5;  DB 3;  Length 55;
  Best Local Similarity   89.5%;  Pred. No. 6.2e-08;
  Matches   17;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy       2 HWSYGLRPGQHWS-GLRPG 19
           |||||||||:||| |||||
Db      19 HWSYGLRPGEHWSYGLRPG 37


RESULT   5
US-07-690-983D-47
; Sequence 47, Application US/07690983D
; Patent No. 5403586
;  GENERAL INFORMATION:
;     APPLICANT:  RUSSELL-JONES, Gregory J.
;     APPLICANT:  STEWART, Andrew G.
;     APPLICANT:  TSONIS, Con G.
;     TITLE OF INVENTION:  FUSION PROTEINS
;     NUMBER OF SEQUENCES:  47
;     CORRESPONDENCE ADDRESS:
;       ADDRESSEE:  Foley & Lardner
;       STREET:  3000 K Street, N.W.
;       CITY:  Washington, D.C.
;       COUNTRY:  USA
;       ZIP:  20007-5109
;     COMPUTER READABLE FORM:
;       MEDIUM TYPE:  Floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  PatentIn Release #1.0, Version #1.25
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/07/690,983D
;       FILING DATE:  25-JUN-1991
;       CLASSIFICATION:  435
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  PCT/AU90/00373
;       FILING DATE:  24-AUG-1990
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  BENT, Stephen A.
;       REGISTRATION NUMBER:  29,768
;       REFERENCE/DOCKET NUMBER:  16786/148 CHAC
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  (202)672-5300
;       TELEFAX:  (202)672-5399
;   INFORMATION FOR SEQ ID NO:  47:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  84 amino acids
;       TYPE:  amino acid
;       TOPOLOGY:  linear
;     MOLECULE TYPE:  protein
US-07-690-983D-47


  Query Match             86.6%;  Score 100.5;  DB 1;  Length 84;
  Best Local Similarity   89.5%;  Pred. No. 9.7e-08;
  Matches   17;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy       2 HWSYGLRPGQHWS-GLRPG 19
           |||||||||:||| |||||
Db       4 HWSYGLRPGEHWSYGLRPG 22


RESULT   6
US-07-690-983D-40
; Sequence 40, Application US/07690983D
; Patent No. 5403586
;  GENERAL INFORMATION:
;     APPLICANT:  RUSSELL-JONES, Gregory J.
;     APPLICANT:  STEWART, Andrew G.
;     APPLICANT:  TSONIS, Con G.
;     TITLE OF INVENTION:  FUSION PROTEINS
;     NUMBER OF SEQUENCES:  47
;     CORRESPONDENCE ADDRESS:
;       ADDRESSEE:  Foley & Lardner
;       STREET:  3000 K Street, N.W.
;       CITY:  Washington, D.C.
;       COUNTRY:  USA
;       ZIP:  20007-5109
;     COMPUTER READABLE FORM:
;       MEDIUM TYPE:  Floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  PatentIn Release #1.0, Version #1.25
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/07/690,983D
;       FILING DATE:  25-JUN-1991
;       CLASSIFICATION:  435
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  PCT/AU90/00373
;       FILING DATE:  24-AUG-1990
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  BENT, Stephen A.
;       REGISTRATION NUMBER:  29,768
;       REFERENCE/DOCKET NUMBER:  16786/148 CHAC
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  (202)672-5300
;       TELEFAX:  (202)672-5399
;   INFORMATION FOR SEQ ID NO:  40:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  20 amino acids
;       TYPE:  amino acid
;       TOPOLOGY:  linear
;     MOLECULE TYPE:  protein
US-07-690-983D-40


  Query Match             81.5%;  Score 94.5;  DB 1;  Length 20;
  Best Local Similarity   88.9%;  Pred. No. 1.5e-07;
  Matches   16;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy       2 HWSYGLRPGQHWS-GLRP 18
           |||||||||:||| ||||
Db       3 HWSYGLRPGEHWSYGLRP 20
```

```
RESULT   7
US-08-694-865-16
; Sequence 16, Application US/08694865
; Patent No. 5837268
;  GENERAL INFORMATION:
;    APPLICANT:  POTTER, ANDREW A.
;    APPLICANT:  MANNS, JOHN G.
;    TITLE OF INVENTION:  GnRH-LEUKOTOXIN CHIMERAS
;    NUMBER OF SEQUENCES:  34
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  REED & ROBINS LLP
;      STREET:  285 HAMILTON AVENUE, SUITE 200
;      CITY:  PALO ALTO
;      STATE:  CA
;      COUNTRY:  USA
;      ZIP:  94301
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/694,865
;      FILING DATE:  09-AUG-1996
;      CLASSIFICATION:  424
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  MCCRACKEN, THOMAS P.
;      REGISTRATION NUMBER:  38,548
;      REFERENCE/DOCKET NUMBER:  9001-0016.22
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (415)327-3400
;      TELEFAX:  (415)327-3231
;  INFORMATION FOR SEQ ID NO:  16:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  699 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-694-865-16


  Query Match             74.1%;  Score 86;  DB 2;  Length 699;
  Best Local Similarity   52.9%;  Pred. No. 0.00011;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels   16;  Gaps    2;

Qy       2 HWSYGLRPG--------------QHWS-GLRPG 19
           |||||||||                |||| |||||
Db      36 HWSYGLRPGSGSQDWSYGLRPGGSQHWSYGLRPG 69


RESULT   8
US-09-124-491-16
; Sequence 16, Application US/09124491
; Patent No. 6022960
;  GENERAL INFORMATION:
;    APPLICANT:  POTTER, ANDREW A.
;    APPLICANT:  MANNS, JOHN G.
;    TITLE OF INVENTION:  GnRH-LEUKOTOXIN CHIMERAS
;    NUMBER OF SEQUENCES:  34
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  REED & ROBINS LLP
;      STREET:  285 HAMILTON AVENUE, SUITE 200
;      CITY:  PALO ALTO
;      STATE:  CA
;      COUNTRY:  USA
;      ZIP:  94301
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/09/124,491
;      FILING DATE:
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 08/694,865
;      FILING DATE:  09-AUG-1996
;      APPLICATION NUMBER:  US 08/387,156
;      FILING DATE:  10-FEB-1995
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 07/960,932
;      FILING DATE:  14-OCT-1992
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 07/779,171
;      FILING DATE:  16-OCT-1991
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  MCCRACKEN, THOMAS P.
;      REGISTRATION NUMBER:  38,548
;      REFERENCE/DOCKET NUMBER:  9001-0016.22
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (415)327-3400
;      TELEFAX:  (415)327-3231
;  INFORMATION FOR SEQ ID NO:  16:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  699 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-09-124-491-16


  Query Match             74.1%;  Score 86;  DB 3;  Length 699;
  Best Local Similarity   52.9%;  Pred. No. 0.00011;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels   16;  Gaps    2;

Qy       2 HWSYGLRPG--------------QHWS-GLRPG 19
           |||||||||                |||| |||||
Db      36 HWSYGLRPGSGSQDWSYGLRPGGSQHWSYGLRPG 69


RESULT   9
US-08-387-156-4
; Sequence 4, Application US/08387156
; Patent No. 5723129
;  GENERAL INFORMATION:
;    APPLICANT:  POTTER, ANDREW A.
;    APPLICANT:  REDMOND, MARK J.
;    APPLICANT:  HUGHES, HUW P.A.
;    TITLE OF INVENTION:  GnRH-LEUKOTOXIN CHIMERAS
;    NUMBER OF SEQUENCES:  28
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  REED & ROBINS
;      STREET:  635 BRYANT STREET
;      CITY:  PALO ALTO
;      STATE:  CALIFORNIA
;      COUNTRY:  UNITED STATES OF AMERICA
;      ZIP:  94301
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/387,156
;      FILING DATE:  10-FEB-1995
;      CLASSIFICATION:  424
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 07/960,932
;      FILING DATE:  14-OCT-1992
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 07/779,171
;      FILING DATE:  16-OCT-1991
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  ROBINS, ROBERTA L.
```

```
;       REGISTRATION NUMBER:  33,208
;       REFERENCE/DOCKET NUMBER:  9001-0016.21
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  (415) 617-8999
;       TELEFAX:  (415) 327-3231
;   INFORMATION FOR SEQ ID NO:  4:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  49 amino acids
;       TYPE:  amino acid
;       TOPOLOGY:  linear
;     MOLECULE TYPE:  protein
US-08-387-156-4


  Query Match             73.7%;  Score 85.5;  DB 1;  Length 49;
  Best Local Similarity   51.4%;  Pred. No. 7.2e-06;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels   17;  Gaps    2;

Qy       2 HWSYGLRPG----------------QHWS-GLRPG 19
           |||||||||                ||||  |||||
Db       2 HWSYGLRPGSGSQDWSYGLRPGGSSQHWSYGLRPG 36


RESULT  10
US-08-694-865-4
; Sequence 4, Application US/08694865
; Patent No. 5837268
;  GENERAL INFORMATION:
;    APPLICANT:  POTTER, ANDREW A.
;    APPLICANT:  MANNS, JOHN G.
;    TITLE OF INVENTION:  GnRH-LEUKOTOXIN CHIMERAS
;    NUMBER OF SEQUENCES:  34
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  REED & ROBINS LLP
;      STREET:  285 HAMILTON AVENUE, SUITE 200
;      CITY:  PALO ALTO
;      STATE:  CA
;      COUNTRY:  USA
;      ZIP:  94301
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/694,865
;      FILING DATE:  09-AUG-1996
;      CLASSIFICATION:  424
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  MCCRACKEN, THOMAS P.
;      REGISTRATION NUMBER:  38,548
;      REFERENCE/DOCKET NUMBER:  9001-0016.22
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (415)327-3400
;      TELEFAX:  (415)327-3231
;  INFORMATION FOR SEQ ID NO:  4:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  49 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-694-865-4


  Query Match             73.7%;  Score 85.5;  DB 2;  Length 49;
  Best Local Similarity   51.4%;  Pred. No. 7.2e-06;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels   17;  Gaps    2;

Qy       2 HWSYGLRPG----------------QHWS-GLRPG 19
           |||||||||                ||||  |||||
Db       2 HWSYGLRPGSGSQDWSYGLRPGGSSQHWSYGLRPG 36


RESULT  11
US-08-878-748-4
; Sequence 4, Application US/08878748
; Patent No. 5969126
;  GENERAL INFORMATION:
;    APPLICANT:  POTTER, ANDREW A.
;    APPLICANT:  REDMOND, MARK J.
;    APPLICANT:  HUGHES, HUW P.A.
;    TITLE OF INVENTION:  GnRH-LEUKOTOXIN CHIMERAS
;    NUMBER OF SEQUENCES:  28
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  REED & ROBINS
;      STREET:  635 BRYANT STREET
;      CITY:  PALO ALTO
;      STATE:  CALIFORNIA
;      COUNTRY:  UNITED STATES OF AMERICA
;      ZIP:  94301
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/878,748
;      FILING DATE:  19-JUN-1997
;      CLASSIFICATION:  536
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 08/387,156
;      FILING DATE:  10-FEB-1995
;      APPLICATION NUMBER:  US 07/960,932
;      FILING DATE:  14-OCT-1992
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 07/779,171
;      FILING DATE:  16-OCT-1991
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  ROBINS, ROBERTA L.
;      REGISTRATION NUMBER:  33,208
;      REFERENCE/DOCKET NUMBER:  9001-0016.21
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (415) 617-8999
;      TELEFAX:  (415) 327-3231
;  INFORMATION FOR SEQ ID NO:  4:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  49 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-878-748-4


  Query Match             73.7%;  Score 85.5;  DB 2;  Length 49;
  Best Local Similarity   51.4%;  Pred. No. 7.2e-06;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels   17;  Gaps    2;

Qy       2 HWSYGLRPG----------------QHWS-GLRPG 19
           |||||||||                ||||  |||||
Db       2 HWSYGLRPGSGSQDWSYGLRPGGSSQHWSYGLRPG 36


RESULT  12
US-09-124-491-4
; Sequence 4, Application US/09124491
; Patent No. 6022960
;  GENERAL INFORMATION:
;    APPLICANT:  POTTER, ANDREW A.
;    APPLICANT:  MANNS, JOHN G.
;    TITLE OF INVENTION:  GnRH-LEUKOTOXIN CHIMERAS
;    NUMBER OF SEQUENCES:  34
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  REED & ROBINS LLP
;      STREET:  285 HAMILTON AVENUE, SUITE 200
;      CITY:  PALO ALTO
;      STATE:  CA
```

```
;       COUNTRY:  USA
;       ZIP:  94301
;     COMPUTER READABLE FORM:
;       MEDIUM TYPE:  Floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  PatentIn Release #1.0, Version #1.30
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/09/124,491
;       FILING DATE:
;       CLASSIFICATION:
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 08/694,865
;       FILING DATE:  09-AUG-1996
;       APPLICATION NUMBER:  US 08/387,156
;       FILING DATE:  10-FEB-1995
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 07/960,932
;       FILING DATE:  14-OCT-1992
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 07/779,171
;       FILING DATE:  16-OCT-1991
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  MCCRACKEN, THOMAS P.
;       REGISTRATION NUMBER:  38,548
;       REFERENCE/DOCKET NUMBER:  9001-0016.22
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  (415)327-3400
;       TELEFAX:  (415)327-3231
;   INFORMATION FOR SEQ ID NO:  4:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  49 amino acids
;       TYPE:  amino acid
;       TOPOLOGY:  linear
;     MOLECULE TYPE:  protein
US-09-124-491-4


  Query Match             73.7%;  Score 85.5;  DB 3;  Length 49;
  Best Local Similarity   51.4%;  Pred. No. 7.2e-06;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels   17;  Gaps    2;

Qy       2 HWSYGLRPG----------------QHWS-GLRPG 19
           |||||||||                |||| |||||
Db       2 HWSYGLRPGSGSQDWSYGLRPGGSSQHWSYGLRPG 36


RESULT  13
US-08-387-156-10
; Sequence 10, Application US/08387156
; Patent No. 5723129
;  GENERAL INFORMATION:
;    APPLICANT:  POTTER, ANDREW A.
;    APPLICANT:  REDMOND, MARK J.
;    APPLICANT:  HUGHES, HUW P.A.
;    TITLE OF INVENTION:  GnRH-LEUKOTOXIN CHIMERAS
;    NUMBER OF SEQUENCES:  28
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  REED & ROBINS
;      STREET:  635 BRYANT STREET
;      CITY:  PALO ALTO
;      STATE:  CALIFORNIA
;      COUNTRY:  UNITED STATES OF AMERICA
;      ZIP:  94301
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/387,156
;      FILING DATE:  10-FEB-1995
;      CLASSIFICATION:  424
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 07/960,932
;      FILING DATE:  14-OCT-1992
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 07/779,171
;      FILING DATE:  16-OCT-1991
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  ROBINS, ROBERTA L.
;      REGISTRATION NUMBER:  33,208
;      REFERENCE/DOCKET NUMBER:  9001-0016.21
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (415) 617-8999
;      TELEFAX:  (415) 327-3231
;  INFORMATION FOR SEQ ID NO:  10:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  544 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-387-156-10


  Query Match             73.7%;  Score 85.5;  DB 1;  Length 544;
  Best Local Similarity   51.4%;  Pred. No. 9.6e-05;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels   17;  Gaps    2;

Qy       2 HWSYGLRPG----------------QHWS-GLRPG 19
           |||||||||                |||| |||||
Db     495 HWSYGLRPGSGSQDWSYGLRPGGSSQHWSYGLRPG 529


RESULT  14
US-08-694-865-10
; Sequence 10, Application US/08694865
; Patent No. 5837268
;  GENERAL INFORMATION:
;    APPLICANT:  POTTER, ANDREW A.
;    APPLICANT:  MANNS, JOHN G.
;    TITLE OF INVENTION:  GnRH-LEUKOTOXIN CHIMERAS
;    NUMBER OF SEQUENCES:  34
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  REED & ROBINS LLP
;      STREET:  285 HAMILTON AVENUE, SUITE 200
;      CITY:  PALO ALTO
;      STATE:  CA
;      COUNTRY:  USA
;      ZIP:  94301
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/694,865
;      FILING DATE:  09-AUG-1996
;      CLASSIFICATION:  424
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  MCCRACKEN, THOMAS P.
;      REGISTRATION NUMBER:  38,548
;      REFERENCE/DOCKET NUMBER:  9001-0016.22
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (415)327-3400
;      TELEFAX:  (415)327-3231
;  INFORMATION FOR SEQ ID NO:  10:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  544 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-694-865-10


  Query Match             73.7%;  Score 85.5;  DB 2;  Length 544;
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  Best Local Similarity   51.4%;  Pred. No. 9.6e-05;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels   17;  Gaps    2;

Qy       2 HWSYGLRPG----------------QHWS-GLRPG 19
           |||||||||                ||||  |||||
Db     495 HWSYGLRPGSGSQDWSYGLRPGGSSQHWSYGLRPG 529


RESULT  15
US-08-878-748-10
; Sequence 10, Application US/08878748
; Patent No. 5969126
;  GENERAL INFORMATION:
;    APPLICANT:  POTTER, ANDREW A.
;    APPLICANT:  REDMOND, MARK J.
;    APPLICANT:  HUGHES, HUW P.A.
;    TITLE OF INVENTION:  GnRH-LEUKOTOXIN CHIMERAS
;    NUMBER OF SEQUENCES:  28
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  REED & ROBINS
;      STREET:  635 BRYANT STREET
;      CITY:  PALO ALTO
;      STATE:  CALIFORNIA
;      COUNTRY:  UNITED STATES OF AMERICA
;      ZIP:  94301
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/878,748
;      FILING DATE:  19-JUN-1997
;      CLASSIFICATION:  536
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 08/387,156
;      FILING DATE:  10-FEB-1995
;      APPLICATION NUMBER:  US 07/960,932
;      FILING DATE:  14-OCT-1992
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 07/779,171
;      FILING DATE:  16-OCT-1991
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  ROBINS, ROBERTA L.
;      REGISTRATION NUMBER:  33,208
;      REFERENCE/DOCKET NUMBER:  9001-0016.21
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (415) 617-8999
;      TELEFAX:  (415) 327-3231
;  INFORMATION FOR SEQ ID NO:  10:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  544 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-878-748-10


  Query Match            73.7%;  Score 85.5;  DB 2;  Length 544;
  Best Local Similarity   51.4%;  Pred. No. 9.6e-05;
  Matches   18;  Conservative    0;  Mismatches    0;  Indels   17;  Gaps    2;

Qy       2 HWSYGLRPG----------------QHWS-GLRPG 19
           |||||||||                ||||  |||||
Db     495 HWSYGLRPGSGSQDWSYGLRPGGSSQHWSYGLRPG 529


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Job time: 39 sec
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GenCore version 4.5

OM protein - protein search, using sw model

Run on: May 25, 2001, 15:32:12 ; Search time 12.88 Seconds
(without alignments)
106.713 Million cell updates/sec

Title: US-09-214-009-1
Perfect score: 116
Sequence: 1 XHWSYGLRPGQHWSGLRPGX 20

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 198801 seqs, 68722935 residues

Total number of hits satisfying chosen parameters: 198801

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR_67:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	58	50.0	10	1	RHPGG	gonadoliberin - pi
2	58	50.0	10	1	RHSHG	gonadoliberin - sh
3	58	50.0	67	2	I78541	gonadoliberin prec
4	58	50.0	89	2	I51423	gonadoliberin prec
5	58	50.0	90	1	RHMSG	gonadoliberin prec
6	58	50.0	92	1	RHHUG	gonadoliberin prec
7	58	50.0	92	1	RHRTG	gonadoliberin prec
8	54	46.6	10	1	RHAQ1	gonadoliberin I -
9	54	46.6	92	2	I50644	gonadoliberin I pr
10	54	46.6	364	2	B83078	probable D-amino a
11	52.5	45.3	120	2	S05791	mating pheromone a
12	52	44.8	98	2	I50739	gonadotropin-relea
13	50	43.1	477	1	CZCLAM	cellulase (EC 3.2.
14	49	42.2	219	2	S74483	hypothetical prote
15	48	41.4	80	1	RHID1S	gonadoliberin I pr
16	48	41.4	91	2	JC7393	medaka-type gonado
17	48	41.4	615	2	H82635	hypothetical prote
18	47.5	40.9	165	1	JFBY1	mating pheromone a
19	47.5	40.9	388	2	C72710	probable fmu prote
20	47	40.5	551	2	E64728	yabN protein - Esc
21	47	40.5	1216	2	T34101	hypothetical prote
22	46.5	40.1	377	2	A35795	carbonate dehydrat
23	46	39.7	186	2	S76125	hypothetical prote
24	45.5	39.2	259	1	CRBO2	carbonate dehydrat
25	45	38.8	10	2	A21114	gonadoliberin - ch
26	45	38.8	74	2	I51092	gonadotropin relea
27	45	38.8	82	2	I51180	gonadotropin-relea
28	45	38.8	82	2	I51355	gonadotropin relea
29	45	38.8	82	2	I51365	gonadotropin-relea
30	45	38.8	82	2	I51331	gonadotropin relea
31	45	38.8	90	2	JC7395	salmon-type gonado
32	45	38.8	90	2	A23735	gonadoliberin prec
33	45	38.8	90	2	I51095	gonadoliberin prec
34	45	38.8	133	2	T35218	hypothetical prote
35	45	38.8	149	2	F72677	hypothetical prote
36	45	38.8	248	2	T46837	precorrin-6x reduc
37	45	38.8	409	2	S12588	pol polyprotein -
38	45	38.8	484	2	JE0261	N-acetylglucosamin
39	45	38.8	571	2	F70040	sulfite reductase
40	45	38.8	584	2	JQ1229	cellulase (EC 3.2.
41	45	38.8	1020	2	D83679	hypothetical prote
42	45	38.8	1444	2	T18856	angiogenesis inhib
43	44.5	38.4	259	1	CRRB2	carbonate dehydrat
44	44.5	38.4	260	1	CRHU2	carbonate dehydrat
45	44.5	38.4	372	2	E36470	Wnt-5b protein - m

ALIGNMENTS

RESULT 1
RHPGG
gonadoliberin - pig
C;Species: Sus scrofa domestica (domestic pig)
C;Date: 13-Jul-1981 #sequence_revision 13-Jul-1981 #text_change 18-Mar-1997
C;Accession: A01411
R;Baba, Y.; Matsuo, H.; Schally, A.V.
Biochem. Biophys. Res. Commun. 44, 459-463, 1971
A;Title: Structure of the porcine LH- and FSH-releasing hormone. II. Confirmation of
A;Reference number: A90172; MUID:72114303
A;Accession: A01411
A;Molecule type: protein
A;Residues: 1-10 <BAB>
R;Matsuo, H.; Arimura, A.; Nair, R.M.G.; Schally, A.V.
Biochem. Biophys. Res. Commun. 45, 822-827, 1971
A;Title: Synthesis of the porcine LH- and FSH-releasing hormone by the solid-phase me
A;Reference number: A90176; MUID:72065376
A;Contents: annotation; synthesis
A;Note: the synthetic and natural hormones have the same physicochemical and biologic
R;Baba, Y.; Arimura, A.; Schally, A.V.
Biochem. Biophys. Res. Commun. 45, 483-487, 1971
A;Title: On the tryptophan residue in porcine LH and FSH-releasing hormone.
A;Reference number: A90175; MUID:72117544
A;Contents: annotation
A;Note: Trp-3 appears to be essential for biological activity
C;Comment: This hypothalamic hormone stimulates the secretion of both luteinizing and
C;Superfamily: gonadoliberin
C;Keywords: amidated carboxyl end; hormone; hypothalamus; pyroglutamic acid
F;1/Modified site: pyrrolidone carboxylic acid (Gln) #status experimental
F;10/Modified site: amidated carboxyl end (Gly) #status experimental

Query Match 50.0%; Score 58; DB 1; Length 10;
Best Local Similarity 100.0%; Pred. No. 0.025;
Matches 9; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy      2 HWSYGLRPG 10
          |||||||||
Db      2 HWSYGLRPG 10
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RESULT 2
RHSHG
gonadoliberin - sheep
C;Species: Ovis orientalis aries, Ovis ammon aries (domestic sheep)
C;Date: 31-Dec-1991 #sequence_revision 31-Dec-1991 #text_change 18-Mar-1997
C;Accession: A93780; A01411
R;Burgus, R.; Butcher, M.; Amoss, M.; Ling, N.; Monahan, M.; Rivier, J.; Fellows, R.;
Proc. Natl. Acad. Sci. U.S.A. 69, 278-282, 1972
A;Title: Primary structure of the ovine hypothalamic luteinizing hormone-releasing fa
A;Reference number: A93780; MUID:72094314
A;Accession: A93780

A;Molecule type: protein
A;Residues: 1-10 <BUR>
A;Note: the natural and synthetic hormones have the same biological activity
C;Comment: This hypothalamic hormone stimulates the secretion of both luteinizing and fo
C;Superfamily: gonadoliberin
C;Keywords: amidated carboxyl end; hormone; hypothalamus; pyroglutamic acid
F;1/Modified site: pyrrolidone carboxylic acid (Gln) #status experimental
F;10/Modified site: amidated carboxyl end (Gly) #status experimental

Query Match 50.0%; Score 58; DB 1; Length 10;
Best Local Similarity 100.0%; Pred. No. 0.025;
Matches 9; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 2 HWSYGLRPG 10
||||||||||
Db 2 HWSYGLRPG 10

RESULT 3
I78541
gonadoliberin precursor - rhesus macaque (fragment)
N;Alternate names: luteinizing hormone releasing hormone
C;Species: Macaca mulatta (rhesus macaque)
C;Date: 02-Aug-1996 #sequence_revision 02-Aug-1996 #text_change 16-Jul-1999
C;Accession: I78541
R;Ma, Y.J.; Costa, M.E.; Ojeda, S.R.
Neuroendocrinology 60, 346-359, 1994
A;Title: Developmental expression of the genes encoding transforming growth factor alpha
A;Reference number: I58134; MUID:95124501
A;Accession: I78541
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-67 <RES>
A;Cross-references: GB:S75918; NID:g912831; PIDN:AAB33096.1; PID:g912832
C;Superfamily: gonadoliberin

Query Match 50.0%; Score 58; DB 2; Length 67;
Best Local Similarity 100.0%; Pred. No. 0.17;
Matches 9; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 2 HWSYGLRPG 10
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Db 7 HWSYGLRPG 15

RESULT 4
I51423
gonadoliberin precursor - African clawed frog
N;Alternate names: luteinizing hormone releasing hormone
C;Species: Xenopus laevis (African clawed frog)
C;Date: 13-Sep-1996 #sequence_revision 13-Sep-1996 #text_change 16-Jul-1999
C;Accession: I51423
R;Hayes, W.P.; Wray, S.; Battey, J.F.
Endocrinology 134, 1835-1845, 1994
A;Title: The frog GnRH-I gene has a mammalian-like expression pattern and conserved doma
A;Reference number: I51423; MUID:94185563
A;Accession: I51423
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1-89 <HAY>
A;Cross-references: GB:L28040; NID:g496291; PIDN:AAA49728.1; PID:g496292
C;Genetics:
A;Gene: GnRH-I
C;Superfamily: gonadoliberin

Query Match 50.0%; Score 58; DB 2; Length 89;
Best Local Similarity 100.0%; Pred. No. 0.23;
Matches 9; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 2 HWSYGLRPG 10
||||||||||
Db 25 HWSYGLRPG 33

RESULT 5
RHMSG
gonadoliberin precursor - mouse
N;Alternate names: gonadotropin-releasing hormone (GnRH); luteinizing hormone releasi
N;Contains: gonadoliberin; gonadoliberin-associated protein (GAP)
C;Species: Mus musculus (house mouse)
C;Date: 31-Dec-1993 #sequence_revision 18-Mar-1997 #text_change 18-Jun-1999
C;Accession: A47578
R;Mason, A.J.; Hayflick, J.S.; Zoeller, R.T.; Young III, W.S.; Phillips, H.S.; Nikoli
Science 234, 1366-1371, 1986
A;Title: A deletion truncating the gonadotropin-releasing hormone gene is responsible
A;Reference number: A47578; MUID:87069928
A;Accession: A47578
A;Molecule type: DNA
A;Residues: 1-90 <MAS>
A;Cross-references: EMBL:M14872; NID:g193576; PIDN:AAA37717.1; PID:g387175
C;Genetics:
A;Introns: 45/3; 77/3
C;Function:
A;Description: gonadoliberin stimulates pituitary secretion of lutropin and follitrop
A;Note: gonadoliberin-associated protein may have prolactin release inhibiting activi
C;Superfamily: gonadoliberin
C;Keywords: amidated carboxyl end; hormone; hypothalamus; pyroglutamic acid
F;1-23/Domain: signal sequence #status predicted <SIG>
F;22-31/Product: gonadoliberin #status predicted <GLB>
F;35-90/Product: gonadoliberin-associated protein #status predicted <GAP>
F;22/Modified site: pyrrolidone carboxylic acid (Gln) (in mature form) #status predic
F;31/Modified site: amidated carboxyl end (Gly) (amide in mature form from following

Query Match 50.0%; Score 58; DB 1; Length 90;
Best Local Similarity 100.0%; Pred. No. 0.23;
Matches 9; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 2 HWSYGLRPG 10
||||||||||
Db 23 HWSYGLRPG 31

RESULT 6
RHHUG
gonadoliberin precursor [validated] - human
N;Alternate names: gonadotropin releasing hormone (GnRH); luteinizing hormone releasi
N;Contains: gonadoliberin-associated protein (GAP); progonadoliberin
C;Species: Homo sapiens (man)
C;Date: 17-Mar-1987 #sequence_revision 21-Jul-1995 #text_change 08-Dec-2000
C;Accession: S05308; A26173; A93342; A90108; A01410; S45718
R;Hayflick, J.S.; Adelman, J.P.; Seeburg, P.H.
Nucleic Acids Res. 17, 6403-6404, 1989
A;Title: The complete nucleotide sequence of the human gonadotropin-releasing hormone
A;Reference number: S05308; MUID:89366682
A;Accession: S05308
A;Status: translation not shown
A;Molecule type: DNA
A;Residues: 1-92 <HAY>
A;Cross-references: EMBL:X15215; NID:g31955; PIDN:CAA33285.1; PID:g31956
R;Adelman, J.P.; Mason, A.J.; Hayflick, J.S.; Seeburg, P.H.
Proc. Natl. Acad. Sci. U.S.A. 83, 179-183, 1986
A;Title: Isolation of the gene and hypothalamic cDNA for the common precursor of gona
A;Reference number: A94090; MUID:86094338
A;Accession: A26173
A;Molecule type: mRNA
A;Residues: 1-92 <ADE>
A;Cross-references: GB:M12578; NID:g183418; PIDN:AAA35916.1; PID:g386749
A;Experimental source: hypothalamus
R;Seeburg, P.H.; Adelman, J.P.
Nature 311, 666-668, 1984
A;Title: Characterization of cDNA for precursor of human luteinizing hormone releasin
A;Reference number: A93342; MUID:85012739

A;Accession: A93342
A;Molecule type: mRNA
A;Residues: 1-15,'S',17-92 <SEE>
A;Cross-references: GB:X01059; NID:g34356; PIDN:CAA25526.1; PID:g34357
A;Experimental source: placenta
R;Tan, L.; Rousseau, P.
Biochem. Biophys. Res. Commun. 109, 1061-1071, 1982
A;Title: The chemical identity of the immunoreactive LHRH-like peptide biosynthesized in
A;Reference number: A90108; MUID:83126573
A;Accession: A90108
A;Molecule type: protein
A;Residues: 24-33 <TAN>
A;Experimental source: placental trophoblasts
R;Leibovitz, D.; Koch, Y.; Pitzer, F.; Fridkin, M.; Dantes, A.; Baumeister, W.; Amsterda
FEBS Lett. 346, 203-206, 1994
A;Title: Sequential degradation of the neuropeptide gonadotropin-releasing hormone by th
A;Reference number: S45718; MUID:94283597
A;Contents: annotation; degradation pathway of synthetic hormone
C;Genetics:
A;Gene: GDB:GNRH; LHRH; GRH
A;Cross-references: GDB:133746; OMIM:227200; OMIM:152760
[redacted] position: 8p21-8p11.2
[redacted]trons: 47/3; 79/3
C;Function:
A;Description: gonadoliberin stimulates pituitary secretion of lutropin and follitropin
A;Note: gonadoliberin-associated protein may have prolactin release inhibiting activiy
C;Superfamily: gonadoliberin
C;Keywords: amidated carboxyl end; hormone; hypothalamus; placenta; pyroglutamic acid
F;1-23/Domain: signal sequence #status predicted <SIG>
F;24-92/Product: progonadoliberin #status predicted <PGN>
F;24-33/Product: gonadoliberin #status experimental <MAT>
F;37-92/Product: gonadoliberin-associated protein #status predicted <GAP>
F;24/Modified site: pyrrolidone carboxylic acid (Gln) (in mature form) #status experimen
F;33/Modified site: amidated carboxyl end (Gly) (amide in mature form from following gly

Query Match 50.0%; Score 58; DB 1; Length 92;
Best Local Similarity 100.0%; Pred. No. 0.23;
Matches 9; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 2 HWSYGLRPG 10
|||||||||
Db 25 HWSYGLRPG 33

RESULT 7
RHRTG
gonadoliberin precursor - rat
N;Alternate names: gonadoliberin-associated protein (GAP); gonadotropin releasing hormon
[redacted]ntains: gonadoliberin; prolactin release-inhibiting factor
[redacted]ecies: Rattus norvegicus (Norway rat)
[redacted]ate: 31-Mar-1988 #sequence_revision 31-Mar-1988 #text_change 18-Jun-1999
C;Accession: A40147; B26173; A48410
R;Bond, C.T.; Hayflick, J.S.; Seeburg, P.H.; Adelman, J.P.
Mol. Endocrinol. 3, 1257-1262, 1989
A;Title: The rat gonadotropin-releasing hormone: SH locus: structure and hypothalamic ex
A;Reference number: A40147; MUID:89384661
A;Accession: A40147
A;Molecule type: DNA
A;Residues: 1-92 <BON>
A;Cross-references: GB:M31670; NID:g204447; PIDN:AAA41264.1; PID:g204448
R;Adelman, J.P.; Mason, A.J.; Hayflick, J.S.; Seeburg, P.H.
Proc. Natl. Acad. Sci. U.S.A. 83, 179-183, 1986
A;Title: Isolation of the gene and hypothalamic cDNA for the common precursor of gonadot
A;Reference number: A94090; MUID:86094338
A;Accession: B26173
A;Molecule type: mRNA
A;Residues: 1-92 <ADE>
A;Cross-references: GB:M12579; NID:g204445; PIDN:AAA41263.1; PID:g204446
R;Maier, C.C.; Marchetti, B.; LeBoeuf, R.D.; Blalock, J.E.
Cell. Mol. Neurobiol. 12, 447-454, 1992
A;Title: Thymocytes express a mRNA that is identical to hypothalamic luteinizing hormone
A;Reference number: A48410; MUID:93105480
A;Accession: A48410
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-92 <MAI>
A;Cross-references: GB:S50870; NID:g262059; PIDN:AAB24572.1; PID:g262060
A;Experimental source: thymus
A;Note: sequence extracted from NCBI backbone (NCBIN:121082, NCBIP:121083)
C;Genetics:
A;Introns: 47/3; 79/3
C;Function:
A;Description: stimulates pituitary secretion of lutropin and follitropin
A;Note: gonadoliberin-associated protein may have prolactin release inhibiting activi
C;Superfamily: gonadoliberin
C;Keywords: amidated carboxyl end; hormone; hypothalamus; placenta; pyroglutamic acid
F;1-23/Domain: signal sequence #status predicted <SIG>
F;24-92/Product: progonadoliberin #status predicted <PGN>
F;24-33/Product: gonadoliberin #status predicted <GLN>
F;37-92/Product: prolactin release-inhibiting factor #status predicted <PIF>
F;24/Modified site: pyrrolidone carboxylic acid (Gln) (in mature form) #status predic
F;33/Modified site: amidated carboxyl end (Gly) (amide in mature form from following

Query Match 50.0%; Score 58; DB 1; Length 92;
Best Local Similarity 100.0%; Pred. No. 0.23;
Matches 9; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 2 HWSYGLRPG 10
|||||||||
Db 25 HWSYGLRPG 33

RESULT 8
RHAQ1
gonadoliberin I - American alligator
N;Alternate names: gonadotropin-releasing hormone I
C;Species: Alligator mississippiensis (American alligator)
C;Date: 31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change 18-Mar-1997
C;Accession: A60066
R;Lovejoy, D.A.; Fischer, W.H.; Parker, D.B.; McRory, J.E.; Park, M.; Lance, V.; Swan
Regul. Pept. 33, 105-116, 1991
A;Title: Primary structure of two forms of gonadotropin-releasing hormone from brains
A;Reference number: A60066; MUID:91352338
A;Accession: A60066
A;Molecule type: protein
A;Residues: 1-10 <LOV>
C;Superfamily: gonadoliberin
C;Keywords: amidated carboxyl end; hormone; hypothalamus; pyroglutamic acid
F;1/Modified site: pyrrolidone carboxylic acid (Gln) #status experimental
F;10/Modified site: amidated carboxyl end (Gly) #status experimental

Query Match 46.6%; Score 54; DB 1; Length 10;
Best Local Similarity 88.9%; Pred. No. 0.089;
Matches 8; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

Qy 2 HWSYGLRPG 10
|||||:||
Db 2 HWSYGLQPG 10

RESULT 9
I50644
gonadoliberin I precursor - chicken
N;Alternate names: gonadotropin-releasing hormone I
C;Species: Gallus gallus (chicken)
C;Date: 21-Feb-1997 #sequence_revision 21-Feb-1997 #text_change 16-Jul-1999
C;Accession: I50644; S33507
R;Dunn, I.C.; Chen, Y.; Hook, C.; Sharp, P.J.; Sang, H.M.
J. Mol. Endocrinol. 11, 19-29, 1993
A;Title: Characterization of the chicken preprogonadotrophin-releasing hormone-I gene
A;Reference number: I50644; MUID:94059355
A;Accession: I50644
A;Status: translated from GB/EMBL/DDBJ

A;Molecule type: DNA
A;Residues: 1-92 <DU2>
A;Cross-references: EMBL:X69491; NID:g496326; PIDN:CAA49246.1; PID:g311612
C;Genetics:
A;Introns: 47/3; 79/3
C;Superfamily: gonadoliberin

Query Match 46.6%; Score 54; DB 2; Length 92;
Best Local Similarity 88.9%; Pred. No. 0.82;
Matches 8; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

Qy 2 HWSYGLRPG 10
||||||:||
Db 25 HWSYGLQPG 33

RESULT 10
[illegible]78
probable D-amino acid oxidase PA4548 [imported] - Pseudomonas aeruginosa (strain PAO1)
C;Species: Pseudomonas aeruginosa
C;Date: 15-Sep-2000 #sequence_revision 15-Sep-2000 #text_change 31-Dec-2000
C;Accession: B83078
R;Stover, C.K.; Pham, X.Q.; Erwin, A.L.; Mizoguchi, S.D.; Warrener, P.; Hickey, M.J.; Br
adman, S.; Yuan, Y.; Brody, L.L.; Coulter, S.N.; Folger, K.R.; Kas, A.; Larbig, K.; Lim,
.; Lory, S.; Olson, M.V.
Nature 406, 959-964, 2000
A;Title: Complete genome sequence of Pseudomonas aeruginosa PA01, an opportunistic patho
A;Reference number: A82950; MUID:20437337
A;Accession: B83078
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-364 <STO>
A;Cross-references: GB:AE004868; GB:AE004091; NID:g9950785; PIDN:AAG07936.1; GSPDB:GN001
A;Experimental source: strain PAO1
C;Genetics:
A;Gene: PA4548

Query Match 46.6%; Score 54; DB 2; Length 364;
Best Local Similarity 61.5%; Pred. No. 3.3;
Matches 8; Conservative 3; Mismatches 2; Indels 0; Gaps 0;

Qy 7 LRPGQHWSGLRPG 19
::| ||:|||||
Db 292 MQPVAHWAGLRPG 304

RESULT 11
S05791
mating pheromone alpha-2 precursor - yeast (Saccharomyces cerevisiae)
N;Alternate names: mating factor alpha-2; mating hormone alpha-2; protein G3181; protein
C;Species: Saccharomyces cerevisiae
C;Date: 23-Apr-1993 #sequence_revision 23-Apr-1993 #text_change 20-Jun-2000
C;Accession: S05791; S64096
R;Singh, A.; Chen, E.Y.; Lugovoy, J.M.; Chang, C.N.; Hitzeman, R.A.; Seeburg, P.H.
Nucleic Acids Res. 11, 4049-4063, 1983
A;Title: Saccharomyces cerevisiae contains two discrete genes coding for the alpha-facto
A;Reference number: S05790; MUID:83246532
A;Accession: S05791
A;Molecule type: DNA
A;Residues: 1-120 <SIN>
A;Cross-references: EMBL:X01582; NID:g3944; PIDN:CAA25739.1; PID:g495233
R;Rieger, M.; Mueller-Auer, S.; Brueckner, M.; Schaefer, M.
submitted to the Protein Sequence Database, May 1996
A;Reference number: S64071
A;Accession: S64096
A;Molecule type: DNA
A;Residues: 1-120 <RIE>
A;Cross-references: EMBL:Z72611; NID:g1322616; PIDN:CAA96795.1; PID:g1322617; MIPS:YGL08
A;Experimental source: strain S288C
C;Genetics:
A;Gene: SGD:MF(ALPHA)2; MFA2
A;Cross-references: SGD:S0003057; MIPS:YGL089c
A;Map position: 7L
C;Superfamily: mating hormone alpha precursor
C;Keywords: conjugation; extracellular protein; glycoprotein; hormone
F;1-21/Domain: signal sequence #status predicted <SIG>
F;87-99/Product: mating pheromone alpha #status predicted <MAT1>
F;108-120/Product: mating pheromone alpha #status predicted <MAT2>
F;52,62,74/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 45.3%; Score 52.5; DB 2; Length 120;
Best Local Similarity 40.0%; Pred. No. 1.7;
Matches 12; Conservative 1; Mismatches 4; Indels 13; Gaps 2;

Qy 2 HWSYGLRPGQ----------HWSGLRPG 19
|| ||||| || |:||
Db 88 HW-LNLRPGQPMYKREANADAWHWLQLKPG 116

RESULT 12
I50739
gonadotropin-releasing hormone - Cichlid (Haplochromis burtoni)
C;Species: Haplochromis burtoni
C;Date: 13-Sep-1996 #sequence_revision 13-Sep-1996 #text_change 21-Jul-2000
C;Accession: I50739
R;White, S.A.; Kasten, T.L.; Bond, C.T.; Adelman, J.P.; Fernald, R.D.
Proc. Natl. Acad. Sci. U.S.A. 92, 8363-8367, 1995
A;Title: Three gonadotropin-releasing hormone genes in one organism suggest novel rol
A;Reference number: I50739; MUID:95396797
A;Accession: I50739
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-98 <WHI>
A;Cross-references: EMBL:U31865; NID:g905398; PIDN:AAC59691.1; PID:g905399
C;Superfamily: gonadoliberin

Query Match 44.8%; Score 52; DB 2; Length 98;
Best Local Similarity 88.9%; Pred. No. 1.6;
Matches 8; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

Qy 2 HWSYGLRPG 10
|||||| ||
Db 24 HWSYGLSPG 32

RESULT 13
CZCLAM
cellulase (EC 3.2.1.4) A precursor - Clostridium thermocellum
N;Alternate names: endo-1,4-beta-glucanase A precursor
C;Species: Clostridium thermocellum
C;Date: 28-Dec-1987 #sequence_revision 28-Dec-1987 #text_change 18-Jun-1999
C;Accession: A23100; B23100
R;Beguin, P.; Cornet, P.; Aubert, J.P.
J. Bacteriol. 162, 102-105, 1985
A;Title: Sequence of a cellulase gene of the thermophilic bacterium Clostridium therm
A;Reference number: A23100; MUID:85157393
A;Accession: A23100
A;Molecule type: DNA
A;Residues: 1-477 <BEG>
A;Cross-references: GB:K03088; NID:g144752; PIDN:AAA83521.1; PID:g144753
A;Accession: B23100
A;Molecule type: protein
A;Residues: 33-48 <BEG2>
C;Genetics:
A;Gene: celA
C;Function:
A;Description: catalyzes the hydrolysis of 1,4-beta-D-glucosidic bonds in beta-D-gluc
A;Pathway: cellulose degradation
C;Superfamily: cellulase A; Clostridium cellulase repeat homology
C;Keywords: duplication; extracellular protein; glycosidase; hydrolase; polysaccharid
F;1-32/Domain: signal sequence #status predicted <SIG>
F;33-477/Product: cellulase A #status predicted <MPT>

F;417-440/Domain: Clostridium cellulase repeat homology <CCR1>
F;449-472/Domain: Clostridium cellulase repeat homology <CCR2>

Query Match 43.1%; Score 50; DB 1; Length 477;
Best Local Similarity 57.1%; Pred. No. 15;
Matches 8; Conservative 1; Mismatches 5; Indels 0; Gaps 0;

Qy 2 HWSYGLRPGQHWSG 15
| || |:|| | |
Db 194 HGSYVLKPGDRWGG 207

RESULT 14
S74483
hypothetical protein sll1063 - Synechocystis sp. (strain PCC 6803)
C;Species: Synechocystis sp.
A;Variety: PCC 6803
C;Date: 25-Apr-1997 #sequence_revision 25-Apr-1997 #text_change 08-Oct-1999
C;Accession: S74483
R;Kaneko, T.; Sato, S.; Kotani, H.; Tanaka, A.; Asamizu, E.; Nakamura, Y.; Miyajima, N.;
.; Okumura, S.; Shimpo, S.; Takeuchi, C.; Wada, T.; Watanabe, A.; Yamada, M.; Yasuda
Res. 3, 109-136, 1996
A;Title: Sequence analysis of the genome of the unicellular cyanobacterium Synechocystis
s.
A;Reference number: S74322; MUID:97061201
A;Accession: S74483
A;Status: nucleic acid sequence not shown; translation not shown
A;Molecule type: DNA
A;Residues: 1-219 <KAN>
A;Cross-references: EMBL:D90899; GB:AB001339; NID:g1651650; PIDN:BAA16635.1; PID:d101736
A;Note: the nucleotide sequence was submitted to the EMBL Data Library, June 1996

Query Match 42.2%; Score 49; DB 2; Length 219;
Best Local Similarity 52.9%; Pred. No. 9.4;
Matches 9; Conservative 1; Mismatches 5; Indels 2; Gaps 1;

Qy 2 HWSYGLRPGQHWSGLRP 18
|| | || ||| :|
Db 193 HWLLGDRP--HWSAAQP 207

RESULT 15
RHID1S
gonadoliberin I precursor - sharptooth catfish
N;Alternate names: gonadoliberin, catfish-type; gonadotropin-releasing hormone I (GnRH-I
N;Contains: gonadoliberin I; gonadoliberin I-associated protein form I; gonadoliberin I-
C;Species: Clarias gariepinus (sharptooth catfish)
ate: 30-Sep-1993 #sequence_revision 18-Mar-1997 #text_change 18-Jun-1999
ccession: S45602; S45601; JC1242; S42936; S42937
Bogerd, J.; Zandbergen, T.; Andersson, E.; Goos, H.
Eur. J. Biochem. 222, 541-549, 1994
A;Title: Isolation, characterization and expression of cDNAs encoding the catfish-type a
A;Reference number: S45600; MUID:94291651
A;Accession: S45602
A;Molecule type: mRNA
A;Residues: 1-80 <BOG1>
A;Cross-references: EMBL:X78049; NID:g459433; PIDN:CAA54971.1; PID:g459434
A;Note: gonadoliberin I-associated protein form I
A;Accession: S45601
A;Molecule type: mRNA
A;Residues: 1-46,'S',48-59,'G',61-80 <BOG2>
A;Cross-references: EMBL:X78048; NID:g459431; PIDN:CAA54970.1; PID:g459432
A;Note: gonadoliberin I-associated protein form II, presumed to be a polymorphic form
R;Bogerd, J.; Li, K.W.; Janssen-Dommerholt, C.; Goos, H.
Biochem. Biophys. Res. Commun. 187, 127-134, 1992
A;Title: Two gonadotropin-releasing hormones from African catfish (Clarias gariepinus).
A;Reference number: JC1242; MUID:92392313
A;Accession: JC1242
A;Molecule type: protein
A;Residues: 22-31 <BOG3>
A;Experimental source: brain
C;Superfamily: gonadoliberin
C;Keywords: amidated carboxyl end; hormone; hypothalamus; pyroglutamic acid
F;1-21/Domain: signal sequence #status predicted <SIG>
F;22-31/Product: gonadoliberin I #status experimental <MAT1>
F;35-80/Product: gonadoliberin I-associated protein #status predicted <MAT2>
F;22/Modified site: pyrrolidone carboxylic acid (Gln) (in mature form) #status experi
F;31/Modified site: amidated carboxyl end (Gly) (amide in mature form from following

Query Match 41.4%; Score 48; DB 1; Length 80;
Best Local Similarity 77.8%; Pred. No. 4.7;
Matches 7; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

Qy 2 HWSYGLRPG 10
|||:|| ||
Db 23 HWSHGLNPG 31

Search completed: May 25, 2001, 15:33:08
Job time: 56 sec

GenCore version 4.5

OM protein - protein search, using sw model

Run on: May 25, 2001, 15:32:52 ; Search time 8.32 Seconds
(without alignments)
82.345 Million cell updates/sec

Title: US-09-214-009-1
Perfect score: 116
Sequence: 1 XHWSYGLRPGQHWSGLRPGX 20

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 93435 seqs, 34255486 residues

Total number of hits satisfying chosen parameters: 93435

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : SwissProt_39:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	58	50.0	61	1	GON1_SHEEP	Q28588 ovis aries
2	58	50.0	63	1	GON1_MESAU	O09163 mesocricetu
3	58	50.0	67	1	GON1_MACMU	P55247 macaca mula
4	58	50.0	89	1	GON1_XENLA	P45656 xenopus lae
5	58	50.0	90	1	GON1_MOUSE	P13562 mus musculu
6	58	50.0	91	1	GON1_PIG	P49921 sus scrofa
7	58	50.0	92	1	GON1_HUMAN	P01148 homo sapien
8	58	50.0	92	1	GON1_RAT	P07490 rattus norv
9	58	50.0	92	1	GON1_TUPGB	Q95335 tupaia glis
10	54	46.6	10	1	GON1_ALLMI	P37041 alligator m
11	54	46.6	92	1	GON1_CHICK	P37042 gallus gall
12	54	46.6	364	1	Y9E8_PSEAE	P33642 pseudomonas
13	52.5	45.3	120	1	MFA4_YEAST	P32435 saccharomyc
14	52	44.8	94	1	GON1_HAPBU	P51918 haplochromi
15	52	44.8	95	1	GON1_PAGMA	P70074 pagrus majo
16	52	44.8	95	1	GON1_SPAAU	P51919 sparus aura
17	50	43.1	477	1	GUNA_CLOTM	P04955 clostridium
18	49	42.2	92	1	GON1_CAVPO	O54713 cavia porce
19	48	41.4	80	1	GON1_CLAGA	P33439 clarias gar
20	47.5	40.9	144	1	MFA1_SACBA	P25501 saccharomyc
21	47.5	40.9	165	1	MFA3_YEAST	P01149 saccharomyc
22	47.5	40.9	186	1	MFA1_SACIT	P25041 saccharomyc
23	47	40.5	273	1	Y4JE_RHISN	P55505 rhizobium s
24	47	40.5	551	1	YABN_ECOLI	P33595 escherichia
25	46.5	40.1	377	1	CAH1_CHLRE	P20507 chlamydomon
26	45.5	39.2	259	1	CAH2_BOVIN	P00921 bos taurus
27	45	38.8	10	1	GON3_ONCKE	P20367 oncorhynchu
28	45	38.8	74	1	GON3_ONCMY	P55246 oncorhynchu
29	45	38.8	74	1	GON3_ONCTS	Q92097 oncorhynchu
30	45	38.8	82	1	GON3_ONCMA	P30973 oncorhynchu
31	45	38.8	82	1	GON3_SALSA	P35629 salmo salar
32	45	38.8	82	1	GON3_SALTR	P45653 salmo trutt
33	45	38.8	89	1	GON3_PORNO	P51922 porichthys
34	45	38.8	90	1	GON3_HAPBU	P45652 haplochromi
35	45	38.8	90	1	GON3_PAGMA	P51921 pagrus majo
36	45	38.8	90	1	GON3_SPAAU	P51923 sparus aura
37	45	38.8	94	1	GON3_CARAU	P51917 carassius a
38	45	38.8	94	1	GON3_RUTRU	Q92106 rutilus rut
39	45	38.8	215	1	ST13_MOUSE	Q60924 mus musculu
40	45	38.8	248	1	COBK_RHOER	Q53139 rhodococcus
41	45	38.8	584	1	GUND_CLOCE	P25472 clostridium
42	44.5	38.4	259	1	CAH2_HUMAN	P00918 homo sapien
43	44.5	38.4	259	1	CAH2_RABIT	P00919 oryctolagus
44	44.5	38.4	372	1	WN5B_MOUSE	P22726 mus musculu
45	44	37.9	220	1	YPY1_ECTHA	P42515 ectothiorho

ALIGNMENTS

```
RESULT   1
GON1_SHEEP
ID   GON1_SHEEP     STANDARD;      PRT;    61 AA.
AC   Q28588;
DT   15-DEC-1998 (Rel. 37, Created)
DT   15-DEC-1998 (Rel. 37, Last sequence update)
DT   30-MAY-2000 (Rel. 39, Last annotation update)
DE   PROGONADOLIBERIN I PRECURSOR [CONTAINS: GONADOLIBERIN I (LHRH I)
DE   (LUTEINIZING HORMONE RELEASING HORMONE I) (GONADOTROPIN RELEASING
DE   HORMONE I) (GNRH I) (LULIBERIN I); GNRH-ASSOCIATED PEPTIDE I]
DE   (FRAGMENT).
GN   GNRH1 OR GNRH OR LHRH.
OS   Ovis aries (Sheep).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovoidea;
OC   Bovidae; Caprinae; Ovis.
OX   NCBI_TaxID=9940;
RN   [1]
RP   SEQUENCE OF 12-61 FROM N.A.
RC   STRAIN=WESTERN RANGE; TISSUE=Hypothalamus;
RA   Rodriguez R.E., Wise M.E.;
RL   Submitted (OCT-1993) to the EMBL/GenBank/DDBJ databases.
RN   [2]
RP   SEQUENCE OF 1-10.
RX   MEDLINE=72094314; PubMed=4550508;
RA   Burgus R., Butcher M., Amoss M., Ling N., Monahan M., Rivier J.,
RA   Fellows R., Blackwell R., Vale W., Guillemin R.;
RT   "Primary structure of the ovine hypothalamic luteinizing hormone-
RT   releasing factor (LRF) (LH-hypothalamus-LRF-gas chromatography-mass
RT   spectrometry-decapeptide-Edman degradation).";
RL   Proc. Natl. Acad. Sci. U.S.A. 69:278-282(1972).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS; IT STIMULATES
CC       THE SECRETION OF BOTH LUTEINIZING AND FOLLICLE-STIMULATING
CC       HORMONES.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ---------------------------------------------------------------------
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CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; U02517; AAA03433.1; -.
DR   PIR; A93780; RHSHG.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Placenta.
FT   NON_TER       1      1
FT   CHAIN         1    >61       PROGONADOLIBERIN I.
FT   PEPTIDE       1     10       GONADOLIBERIN I.
FT   PEPTIDE      14    >61       GNRH-ASSOCIATED PEPTIDE I.
FT   ACT_SITE      3      3       APPEARS TO BE ESSENTIAL FOR BIOLOGICAL
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FT                                ACTIVITY.
FT   MOD_RES       1      1       PYRROLIDONE CARBOXYLIC ACID.
FT   MOD_RES      10     10       AMIDATION (G-11 PROVIDE AMIDE GROUP).
FT   NON_TER      61     61
SQ   SEQUENCE   61 AA;  6828 MW;  63962A1AE319B8F0 CRC64;


  Query Match             50.0%;  Score 58;  DB 1;  Length 61;
  Best Local Similarity   100.0%;  Pred. No. 0.043;
  Matches    9;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      2 HWSYGLRPG 10
          |||||||||
Db      2 HWSYGLRPG 10


RESULT   2
Q[redacted]MESAU
A[redacted]GON1_MESAU     STANDARD;      PRT;    63 AA.
AC   O09163;
DT   15-DEC-1998 (Rel. 37, Created)
DT   15-DEC-1998 (Rel. 37, Last sequence update)
DT   30-MAY-2000 (Rel. 39, Last annotation update)
DE   PROGONADOLIBERIN I PRECURSOR [CONTAINS: GONADOLIBERIN I (LHRH I)
DE   (LUTEINIZING HORMONE RELEASING HORMONE I) (GONADOTROPIN RELEASING
DE   HORMONE I) (GNRH I) (LULIBERIN I); GNRH-ASSOCIATED PEPTIDE I]
DE   (FRAGMENT).
GN   GNRH1 OR GNRH OR LHRH.
OS   Mesocricetus auratus (Golden hamster).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;
OC   Mesocricetus.
OX   NCBI_TaxID=10036;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Jansen H.T., Stevens P.J., Zeitler P., Lehman M.N.;
RL   Submitted (MAR-1997) to the EMBL/GenBank/DDBJ databases.
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS; IT STIMULATES
CC       THE SECRETION OF BOTH LUTEINIZING AND FOLLICLE-STIMULATING
CC       HORMONES.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ----------------------------------------------------------------------
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CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
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CC   use by non-profit institutions as long as its content is in no way
C[redacted]modified and this statement is not removed. Usage by and for commercial
C[redacted]entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; U91938; AAB51302.1; -.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Placenta.
FT   NON_TER       1      1
FT   CHAIN         1    >63       PROGONADOLIBERIN I.
FT   PEPTIDE       1     10       GONADOLIBERIN I.
FT   PEPTIDE      14    >63       GNRH-ASSOCIATED PEPTIDE I (BY
FT                                SIMILARITY).
FT   ACT_SITE      3      3       APPEARS TO BE ESSENTIAL FOR BIOLOGICAL
FT                                ACTIVITY (BY SIMILARITY).
FT   MOD_RES       1      1       PYRROLIDONE CARBOXYLIC ACID (BY
FT                                SIMILARITY).
FT   MOD_RES      10     10       AMIDATION (G-11 PROVIDE AMIDE GROUP) (BY
FT                                SIMILARITY).
FT   NON_TER      63     63
SQ   SEQUENCE   63 AA;  7370 MW;  FC94995676F77180 CRC64;


  Query Match             50.0%;  Score 58;  DB 1;  Length 63;
  Best Local Similarity   100.0%;  Pred. No. 0.044;
  Matches    9;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      2 HWSYGLRPG 10
          |||||||||
Db      2 HWSYGLRPG 10


RESULT   3
GON1_MACMU
ID   GON1_MACMU     STANDARD;      PRT;    67 AA.
AC   P55247;
DT   01-OCT-1996 (Rel. 34, Created)
DT   01-OCT-1996 (Rel. 34, Last sequence update)
DT   30-MAY-2000 (Rel. 39, Last annotation update)
DE   PROGONADOLIBERIN I PRECURSOR [CONTAINS: GONADOLIBERIN I (LHRH I)
DE   (LUTEINIZING HORMONE RELEASING HORMONE I) (GONADOTROPIN RELEASING
DE   HORMONE I) (GNRH I) (LULIBERIN I); GNRH-ASSOCIATED PEPTIDE I]
DE   (FRAGMENT).
GN   GNRH1 OR GNRH OR LHRH.
OS   Macaca mulatta (Rhesus macaque).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
OC   Cercopithecinae; Macaca.
OX   NCBI_TaxID=9544;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Hypothalamus;
RX   MEDLINE=95124501; PubMed=7545971;
RA   Ma Y.J., Costa M.E., Ojeda S.R.;
RT   "Developmental expression of the genes encoding transforming growth
RT   factor alpha and its receptor in the hypothalamus of female rhesus
RT   macaques.";
RL   Neuroendocrinology 60:346-359(1994).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS; IT STIMULATES
CC       THE SECRETION OF BOTH LUTEINIZING AND FOLLICLE-STIMULATING
CC       HORMONES.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ----------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; S75918; AAB33096.1; -.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Signal.
FT   NON_TER       1      1
FT   SIGNAL       <1      5       BY SIMILARITY.
FT   CHAIN         6    >67       PROGONADOLIBERIN I.
FT   PEPTIDE       6     15       GONADOLIBERIN I.
FT   PEPTIDE      19    >67       GNRH-ASSOCIATED PEPTIDE I.
FT   ACT_SITE      8      8       APPEARS TO BE ESSENTIAL FOR BIOLOGICAL
FT                                ACTIVITY (BY SIMILARITY).
FT   MOD_RES       6      6       PYRROLIDONE CARBOXYLIC ACID (BY
FT                                SIMILARITY).
FT   MOD_RES      15     15       AMIDATION (G-16 PROVIDE AMIDE GROUP) (BY
FT                                SIMILARITY).
FT   NON_TER      67     67
SQ   SEQUENCE   67 AA;  7573 MW;  505394DAA261A3F2 CRC64;


  Query Match             50.0%;  Score 58;  DB 1;  Length 67;
  Best Local Similarity   100.0%;  Pred. No. 0.047;
  Matches    9;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      2 HWSYGLRPG 10
          |||||||||
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Db      7 HWSYGLRPG 15


RESULT   4
GON1_XENLA
ID   GON1_XENLA     STANDARD;      PRT;    89 AA.
AC   P45656;
DT   01-NOV-1995 (Rel. 32, Created)
DT   01-NOV-1995 (Rel. 32, Last sequence update)
DT   30-MAY-2000 (Rel. 39, Last annotation update)
DE   GONADOLIBERIN I PRECURSOR (GONADOTROPIN-RELEASING HORMONE I) (GNRH-I)
DE   (LH-RH) (LULIBERIN I).
OS   Xenopus laevis (African clawed frog).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Amphibia; Batrachia; Anura; Mesobatrachia; Pipoidea; Pipidae;
OC   Xenopodinae; Xenopus.
OX   NCBI_TaxID=8355;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Forebrain;
RX   MEDLINE=94185563; PubMed=8137750;
RA   Hayes W.P., Wray S., Battey J.F.;
RT   "The frog gonadotropin-releasing hormone-I (GnRH-I) gene has a
RT   mammalian-like expression pattern and conserved domains in
RT   GnRH-associated peptide, but brain onset is delayed until
RT   metamorphosis.";
RL   Endocrinology 134:1835-1844(1994).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; L28040; AAA49728.1; -.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Signal.
FT   SIGNAL        1     23
FT   CHAIN        24     89       PROGONADOLIBERIN I.
FT   PEPTIDE      24     33       GONADOLIBERIN I.
FT   CHAIN        37     89       GONADOTROPIN-RELEASING HORMONE ASSOCIATED
FT                                PEPTIDE.
FT   PEPTIDE      37     85       GNRH-ASSOCIATED PEPTIDE I (GAP).
FT   MOD_RES      24     24       PYRROLIDONE CARBOXYLIC ACID.
FT   MOD_RES      33     33       AMIDATION (G-34 PROVIDE AMIDE GROUP).
SQ   SEQUENCE   89 AA;  10246 MW;  6F4F36FBAE0D4284 CRC64;


  Query Match             50.0%;  Score 58;  DB 1;  Length 89;
  Best Local Similarity   100.0%;  Pred. No. 0.061;
  Matches    9;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      2 HWSYGLRPG 10
          |||||||||
Db     25 HWSYGLRPG 33


RESULT   5
GON1_MOUSE
ID   GON1_MOUSE     STANDARD;      PRT;    90 AA.
AC   P13562;
DT   01-JAN-1990 (Rel. 13, Created)
DT   01-JAN-1990 (Rel. 13, Last sequence update)
DT   30-MAY-2000 (Rel. 39, Last annotation update)
DE   PROGONADOLIBERIN I PRECURSOR [CONTAINS: GONADOLIBERIN I (LHRH I)
DE   (LUTEINIZING HORMONE RELEASING HORMONE I) (GONADOTROPIN RELEASING
DE   HORMONE I) (GNRH I) (LULIBERIN I); PROLACTIN RELEASE-INHIBITING FACTOR
DE   I].
GN   GNRH1 OR GNRH.
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=87069928; PubMed=3024317;
RA   Mason A.J., Hayflick J.S., Zoeller R.T., Young W.S. III,
RA   Phillips H.S., Nikolics K., Seeburg P.H.;
RT   "A deletion truncating the gonadotropin-releasing hormone gene is
RT   responsible for hypogonadism in the hpg mouse.";
RL   Science 234:1366-1371(1986).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS; IT STIMULATES
CC       THE SECRETION OF BOTH LUTEINIZING AND FOLLICLE-STIMULATING
CC       HORMONES.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ---------------------------------------------------------------------
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CC   ---------------------------------------------------------------------
DR   EMBL; M14872; AAA37717.1; -.
DR   MGD; MGI:95789; Gnrh.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Placenta; Signal.
FT   SIGNAL        1     21
FT   CHAIN        22     90       PROGONADOLIBERIN I.
FT   PEPTIDE      22     31       GONADOLIBERIN I.
FT   PEPTIDE      35     90       PROLACTIN RELEASE-INHIBITING FACTOR I.
FT   ACT_SITE     24     24       APPEARS TO BE ESSENTIAL FOR BIOLOGICAL
FT                                ACTIVITY.
FT   MOD_RES      22     22       PYRROLIDONE CARBOXYLIC ACID.
FT   MOD_RES      31     31       AMIDATION (G-32 PROVIDE AMIDE GROUP).
SQ   SEQUENCE   90 AA;  10337 MW;  1C0766FA4826E4D9 CRC64;


  Query Match             50.0%;  Score 58;  DB 1;  Length 90;
  Best Local Similarity   100.0%;  Pred. No. 0.062;
  Matches    9;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      2 HWSYGLRPG 10
          |||||||||
Db     23 HWSYGLRPG 31


RESULT   6
GON1_PIG
ID   GON1_PIG       STANDARD;      PRT;    91 AA.
AC   P49921;
DT   01-OCT-1996 (Rel. 34, Created)
DT   01-OCT-1996 (Rel. 34, Last sequence update)
DT   30-MAY-2000 (Rel. 39, Last annotation update)
DE   PROGONADOLIBERIN I PRECURSOR [CONTAINS: GONADOLIBERIN I (LHRH I)
DE   (LUTEINIZING HORMONE RELEASING HORMONE I) (GONADOTROPIN RELEASING
DE   HORMONE I) (GNRH I) (LULIBERIN I); GNRH-ASSOCIATED PEPTIDE I].
GN   GNRH1 OR GNRH.
OS   Sus scrofa (Pig).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Cetartiodactyla; Suina; Suidae; Sus.
OX   NCBI_TaxID=9823;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Hypothalamus;
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RA   Weesner G.D., Matteri R.L., Becker B.A.;
RL   Submitted (MAY-1994) to the EMBL/GenBank/DDBJ databases.
RN   [2]
RP   SEQUENCE OF 24-33.
RX   MEDLINE=72114303; PubMed=4946067;
RA   Baba Y., Matsuo H., Schally A.V.;
RT   "Structure of the porcine LH- and FSH-releasing hormone. II.
RT   Confirmation of the proposed structure by conventional sequential
RT   analyses.";
RL   Biochem. Biophys. Res. Commun. 44:459-463(1971).
RN   [3]
RP   SYNTHESIS OF GONADOLIBERIN.
RX   MEDLINE=72065376; PubMed=4942726;
RA   Matsuo H., Arimura A., Nair R.M.G., Schally A.V.;
RT   "Synthesis of the porcine LH- and FSH-releasing hormone by the solid-
RT   phase method.";
RL   Biochem. Biophys. Res. Commun. 45:822-827(1971).
R    [4]
      SYNTHESIS OF GONADOLIBERIN.
R    MEDLINE=72117544; PubMed=4946275;
RA   Baba Y., Arimura A., Schally A.V.;
RT   "On the tryptophan residue in porcine LH and FSH-releasing hormone.";
RL   Biochem. Biophys. Res. Commun. 45:483-487(1971).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS; IT STIMULATES
CC       THE SECRETION OF BOTH LUTEINIZING AND FOLLICLE-STIMULATING
CC       HORMONES.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; L32864; AAA31066.1; -.
DR   PIR; A01411; RHPGG.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Placenta; Signal.
FT   SIGNAL        1     23
FT   CHAIN        24     91       PROGONADOLIBERIN I.
FT   PEPTIDE      24     33       GONADOLIBERIN I.
F    PEPTIDE      34     91       GNRH-ASSOCIATED PEPTIDE I.
F    ACT_SITE     26     26       APPEARS TO BE ESSENTIAL FOR BIOLOGICAL
FT                                ACTIVITY.
FT   MOD_RES      24     24       PYRROLIDONE CARBOXYLIC ACID.
FT   MOD_RES      33     33       AMIDATION (G-34 PROVIDE AMIDE GROUP).
SQ   SEQUENCE   91 AA;  10090 MW;  8340474F32DDAA99 CRC64;


  Query Match             50.0%;  Score 58;  DB 1;  Length 91;
  Best Local Similarity   100.0%;  Pred. No. 0.063;
  Matches    9;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       2 HWSYGLRPG 10
           |||||||||
Db      25 HWSYGLRPG 33


RESULT   7
GON1_HUMAN
ID   GON1_HUMAN     STANDARD;      PRT;    92 AA.
AC   P01148;
DT   21-JUL-1986 (Rel. 01, Created)
DT   01-APR-1988 (Rel. 07, Last sequence update)
DT   01-OCT-2000 (Rel. 40, Last annotation update)
DE   PROGONADOLIBERIN I PRECURSOR [CONTAINS: GONADOLIBERIN I (LHRH I)
DE   (LUTEINIZING HORMONE RELEASING HORMONE I) (GONADOTROPIN RELEASING
DE   HORMONE I) (GNRH I) (LULIBERIN I) (GONADORELIN); GNRH-ASSOCIATED
DE   PEPTIDE I].
GN   GNRH1 OR GNRH OR LHRH.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=89366682; PubMed=2671939;
RA   Hayflick J.S., Adelman J.P., Seeburg P.H.;
RT   "The complete nucleotide sequence of the human gonadotropin-releasing
RT   hormone gene.";
RL   Nucleic Acids Res. 17:6403-6403(1989).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=86094338; PubMed=2867548;
RA   Adelman J.P., Mason A.J., Hayflick J.S., Seeburg P.H.;
RT   "Isolation of the gene and hypothalamic cDNA for the common precursor
RT   of gonadotropin-releasing hormone and prolactin release-inhibiting
RT   factor in human and rat.";
RL   Proc. Natl. Acad. Sci. U.S.A. 83:179-183(1986).
RN   [3]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=85012739; PubMed=6090951;
RA   Seeburg P.H., Adelman J.P.;
RT   "Characterization of cDNA for precursor of human luteinizing hormone
RT   releasing hormone.";
RL   Nature 311:666-668(1984).
RN   [4]
RP   SEQUENCE OF 24-33.
RX   MEDLINE=83126573; PubMed=6760865;
RA   Tan L., Rousseau P.;
RT   "The chemical identity of the immunoreactive LHRH-like peptide
RT   biosynthesized in the human placenta.";
RL   Biochem. Biophys. Res. Commun. 109:1061-1071(1982).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS; IT STIMULATES
CC       THE SECRETION OF BOTH LUTEINIZING AND FOLLICLE-STIMULATING
CC       HORMONES.
CC   -!- PHARMACEUTICAL: AVAILABLE UNDER THE NAMES FACTREL (AYERST LABS),
CC       LUTREPULSE OR LUTRELEF (FERRING PHARMACEUTICALS) AND RELISORM
CC       (SERONO).
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ---------------------------------------------------------------------
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CC   ---------------------------------------------------------------------
DR   EMBL; X01059; CAA25526.1; -.
DR   EMBL; M12578; AAA35916.1; -.
DR   EMBL; X15215; CAA33285.1; -.
DR   PIR; A01410; RHHUG.
DR   PIR; A26173; A26173.
DR   PIR; S05308; S05308.
DR   MIM; 152760; -.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Placenta; Pharmaceutical; Signal.
FT   SIGNAL        1     23
FT   CHAIN        24     92       PROGONADOLIBERIN I.
FT   PEPTIDE      24     33       GONADOLIBERIN I.
FT   PEPTIDE      37     92       GNRH-ASSOCIATED PEPTIDE I.
FT   ACT_SITE     26     26       APPEARS TO BE ESSENTIAL FOR BIOLOGICAL
FT                                ACTIVITY.
FT   MOD_RES      24     24       PYRROLIDONE CARBOXYLIC ACID.
FT   MOD_RES      33     33       AMIDATION (G-34 PROVIDE AMIDE GROUP).
FT   CONFLICT     16     16       W -> S (IN REF. 3).
SQ   SEQUENCE   92 AA;  10380 MW;  30A72221B076FA79 CRC64;
```

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  Query Match             50.0%;  Score 58;  DB 1;  Length 92;
  Best Local Similarity   100.0%;  Pred. No. 0.063;
  Matches    9;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      2 HWSYGLRPG 10
          |||||||||
Db     25 HWSYGLRPG 33


RESULT   8
GON1_RAT
ID   GON1_RAT       STANDARD;      PRT;    92 AA.
AC   P07490;
DT   01-APR-1988 (Rel. 07, Created)
DT   01-APR-1988 (Rel. 07, Last sequence update)
DT   01-OCT-2000 (Rel. 40, Last annotation update)
DE   PROGONADOLIBERIN I PRECURSOR [CONTAINS: GONADOLIBERIN I (LHRH I)
DE   (LUTEINIZING HORMONE RELEASING HORMONE I) (GONADOTROPIN RELEASING
DE   HORMONE I) (GNRH I) (LULIBERIN I); PROLACTIN RELEASE-INHIBITING FACTOR
DE   I].
GN   GNRH1 OR GNRH.
OS   Rattus norvegicus (Rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX   NCBI_TaxID=10116;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=86094338; PubMed=2867548;
RA   Adelman J.P., Mason A.J., Hayflick J.S., Seeburg P.H.;
RT   "Isolation of the gene and hypothalamic cDNA for the common precursor
RT   of gonadotropin-releasing hormone and prolactin release-inhibiting
RT   factor in human and rat.";
RL   Proc. Natl. Acad. Sci. U.S.A. 83:179-183(1986).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=89384661; PubMed=2476669;
RA   Bond C.T., Hayflick J.S., Seeburg P.H., Adelman J.P.;
RT   "The rat gonadotropin-releasing hormone: SH locus: structure and
RT   hypothalamic expression.";
RL   Mol. Endocrinol. 3:1257-1262(1989).
RN   [3]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Thymus;
RX   MEDLINE=93105480; PubMed=1468115;
RA   Maier C.C., Marchetti B., Leboeuf R.D., Blalock J.E.;
RT   "Thymocytes express a mRNA that is identical to hypothalamic
RT   luteinizing hormone-releasing hormone mRNA.";
RL   Cell. Mol. Neurobiol. 12:447-454(1992).
RN   [4]
RP   SEQUENCE OF 1-47 FROM N.A.
RC   TISSUE=Heart;
RX   MEDLINE=87149087; PubMed=3547652;
RA   Adelman J.P., Bond C.T., Douglass J., Herbert E.;
RT   "Two mammalian genes transcribed from opposite strands of the same
RT   DNA locus.";
RL   Science 235:1514-1517(1987).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS; IT STIMULATES
CC       THE SECRETION OF BOTH LUTEINIZING AND FOLLICLE-STIMULATING
CC       HORMONES.
CC   -!- TISSUE SPECIFICITY: CENTRAL NERVOUS SYSTEM.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; S50870; AAB24572.1; -.
DR   EMBL; M12579; AAA41263.1; -.
DR   EMBL; M31670; AAA41264.1; -.
DR   EMBL; M15527; AAA42141.1; ALT_SEQ.
DR   EMBL; M15529; AAA42139.1; -.
DR   EMBL; M15528; -; NOT_ANNOTATED_CDS.
DR   PIR; B26173; RHRTG.
DR   PIR; A48410; A48410.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Placenta; Signal.
FT   SIGNAL        1     23
FT   CHAIN        24     92       PROGONADOLIBERIN I.
FT   PEPTIDE      24     33       GONADOLIBERIN I.
FT   PEPTIDE      37     92       PROLACTIN RELEASE-INHIBITING FACTOR I.
FT   ACT_SITE     26     26       APPEARS TO BE ESSENTIAL FOR BIOLOGICAL
FT                                ACTIVITY.
FT   MOD_RES      24     24       PYRROLIDONE CARBOXYLIC ACID.
FT   MOD_RES      33     33       AMIDATION (G-34 PROVIDE AMIDE GROUP).
SQ   SEQUENCE   92 AA;  10500 MW;  494B5C64DA8A3EB3 CRC64;


  Query Match             50.0%;  Score 58;  DB 1;  Length 92;
  Best Local Similarity   100.0%;  Pred. No. 0.063;
  Matches    9;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      2 HWSYGLRPG 10
          |||||||||
Db     25 HWSYGLRPG 33


RESULT   9
GON1_TUPGB
ID   GON1_TUPGB     STANDARD;      PRT;    92 AA.
AC   Q95335;
DT   15-DEC-1998 (Rel. 37, Created)
DT   15-DEC-1998 (Rel. 37, Last sequence update)
DT   30-MAY-2000 (Rel. 39, Last annotation update)
DE   PROGONADOLIBERIN I PRECURSOR [CONTAINS: GONADOLIBERIN I (LHRH I)
DE   (LUTEINIZING HORMONE RELEASING HORMONE I) (GONADOTROPIN RELEASING
DE   HORMONE I) (GNRH I) (LULIBERIN I); GNRH-ASSOCIATED PEPTIDE I].
GN   GNRH1 OR GNRH.
OS   Tupaia glis belangeri (Common tree shrew).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Scandentia; Tupaiidae; Tupaia.
OX   NCBI_TaxID=9396;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Hypothalamus;
RX   MEDLINE=97079639; PubMed=8921350;
RA   Kasten T.L., White S.A., Norton T.T., Bond C.T., Adelman J.P.,
RA   Fernald R.D.;
RT   "Characterization of two new preproGnRH mRNAs in the tree shrew:
RT   first direct evidence for mesencephalic GnRH gene expression in a
RT   placental mammal.";
RL   Gen. Comp. Endocrinol. 104:7-19(1996).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS; IT STIMULATES
CC       THE SECRETION OF BOTH LUTEINIZING AND FOLLICLE-STIMULATING
CC       HORMONES.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; U63326; AAB16837.1; -.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
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DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Placenta; Signal.
FT   SIGNAL        1     23       BY SIMILARITY.
FT   CHAIN        24     92       PROGONADOLIBERIN I.
FT   PEPTIDE      24     33       GONADOLIBERIN I.
FT   PEPTIDE      37     92       GNRH-ASSOCIATED PEPTIDE I.
FT   ACT_SITE     26     26       APPEARS TO BE ESSENTIAL FOR BIOLOGICAL
FT                                ACTIVITY.
FT   MOD_RES      24     24       PYRROLIDONE CARBOXYLIC ACID (BY
FT                                SIMILARITY).
FT   MOD_RES      33     33       AMIDATION (G-34 PROVIDE AMIDE GROUP) (BY
FT                                SIMILARITY).
SQ   SEQUENCE   92 AA;  10197 MW;  4FDBF2C58CF5F63B CRC64;


  Query Match             50.0%;  Score 58;  DB 1;  Length 92;
  Best Local Similarity   100.0%;  Pred. No. 0.063;
  Matches    9;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       2 HWSYGLRPG 10
           |||||||||
Db      25 HWSYGLRPG 33


RESULT  10
GON1_ALLMI
ID   GON1_ALLMI     STANDARD;      PRT;    10 AA.
AC   P37041; P20407;
DT   01-FEB-1991 (Rel. 17, Created)
DT   01-FEB-1991 (Rel. 17, Last sequence update)
DT   15-DEC-1998 (Rel. 37, Last annotation update)
DE   GONADOLIBERIN I (GONADOTROPIN-RELEASING HORMONE I) (GNRH-I) (LH-RH I)
DE   (LULIBERIN I).
OS   Alligator mississippiensis (American alligator).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Archosauria; Crocodylidae; Alligatorinae; Alligator.
OX   NCBI_TaxID=8496;
RN   [1]
RP   SEQUENCE.
RC   TISSUE=Brain;
RX   MEDLINE=91352338; PubMed=1882082;
RA   Lovejoy D.A., Fischer W.H., Parker D.B., McRory J.E., Park M.,
RA   Lance V., Swanson P., Rivier J.E., Sherwood N.M.;
RT   "Primary structure of two forms of gonadotropin-releasing hormone
RT   from brains of the American alligator (Alligator mississippiensis).";
RL   Regul. Pept. 33:105-116(1991).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
DR   PIR; A60066; RHAQ1.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Hormone; Amidation; Hypothalamus.
FT   MOD_RES       1      1       PYRROLIDONE CARBOXYLIC ACID.
FT   MOD_RES      10     10       AMIDATION.
SQ   SEQUENCE   10 AA;  1172 MW;  284B23D7286B45A3 CRC64;


  Query Match             46.6%;  Score 54;  DB 1;  Length 10;
  Best Local Similarity   88.9%;  Pred. No. 0.028;
  Matches    8;  Conservative    1;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       2 HWSYGLRPG 10
           ||||||:||
Db       2 HWSYGLQPG 10


RESULT  11
GON1_CHICK
ID   GON1_CHICK     STANDARD;      PRT;    92 AA.
AC   P37042; P20407;
DT   01-FEB-1991 (Rel. 17, Created)
DT   01-JUN-1994 (Rel. 29, Last sequence update)
DT   30-MAY-2000 (Rel. 39, Last annotation update)
DE   PROGONADOLIBERIN I PRECURSOR [CONTAINS: GONADOLIBERIN I (LHRH I)
DE   (LUTEINIZING HORMONE RELEASING HORMONE I) (GONADOTROPIN RELEASING
DE   HORMONE I) (GNRH I) (LULIBERIN I); GNRH-ASSOCIATED PEPTIDE I].
OS   Gallus gallus (Chicken).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC   Gallus.
OX   NCBI_TaxID=9031;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=WHITE LEGHORN;
RX   MEDLINE=94059355; PubMed=7902095;
RA   Dunn I.C., Chen Y., Hook C., Sharp P.J., Sang H.M.;
RT   "Characterization of the chicken preprogonadotrophin-releasing
RT   hormone-I gene.";
RL   J. Mol. Endocrinol. 11:19-29(1993).
RN   [2]
RP   SEQUENCE OF 24-33.
RC   TISSUE=Hypothalamus;
RX   MEDLINE=82265778; PubMed=7050119;
RA   King J.A., Millar R.P.;
RT   "Structure of chicken hypothalamic luteinizing hormone-releasing
RT   hormone. II. Isolation and characterization.";
RL   J. Biol. Chem. 257:10729-10732(1982).
RN   [3]
RP   SEQUENCE OF 24-33.
RC   TISSUE=Hypothalamus;
RA   King J.A., Millar R.P.;
RT   "Structure of avian hypothalamic gonadotrophin-releasing hormone.";
RL   S. Afr. J. Sci. 78:124-125(1982).
RN   [4]
RP   SYNTHESIS OF 24-33.
RX   MEDLINE=82265777; PubMed=7050118;
RA   King J.A., Millar R.P.;
RT   "Structure of chicken hypothalamic luteinizing hormone-releasing
RT   hormone. I. Structural determination on partially purified
RT   material.";
RL   J. Biol. Chem. 257:10722-10728(1982).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ---------------------------------------------------------------------
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CC   ---------------------------------------------------------------------
DR   EMBL; X69491; CAA49246.1; -.
DR   PIR; S33507; S33507.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Signal.
FT   SIGNAL        1     23
FT   CHAIN        24     92       PROGONADOLIBERIN I.
FT   PEPTIDE      24     33       GONADOLIBERIN I.
FT   PEPTIDE      37     92       GNRH-ASSOCIATED PEPTIDE I.
FT   MOD_RES      24     24       PYRROLIDONE CARBOXYLIC ACID.
FT   MOD_RES      33     33       AMIDATION (G-34 PROVIDE AMIDE GROUP).
SQ   SEQUENCE   92 AA;  10206 MW;  61AEB7EBAF508B6A CRC64;


  Query Match             46.6%;  Score 54;  DB 1;  Length 92;
  Best Local Similarity   88.9%;  Pred. No. 0.23;
  Matches    8;  Conservative    1;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       2 HWSYGLRPG 10
           ||||||:||
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Db      25 HWSYGLQPG 33


RESULT  12
Y9E8_PSEAE
ID   Y9E8_PSEAE     STANDARD;      PRT;   364 AA.
AC   P33642; Q51527; Q9HVN1;
DT   01-FEB-1994 (Rel. 28, Created)
DT   01-OCT-2000 (Rel. 40, Last sequence update)
DT   01-OCT-2000 (Rel. 40, Last annotation update)
DE   PROBABLE D-AMINO ACID OXIDASE PA4548.
GN   PA4548.
OS   Pseudomonas aeruginosa.
OC   Bacteria; Proteobacteria; gamma subdivision; Pseudomonadaceae;
OC   Pseudomonas.
OX   NCBI_TaxID=287;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=ATCC 15692 / PAO1;
RX   MEDLINE=96272255; PubMed=8682785;
RA   Alm R.A., Mattick J.S.;
RT   "Identification of two genes with prepilin-like leader sequences
RT   involved in type 4 fimbrial biogenesis in Pseudomonas aeruginosa.";
RL   J. Bacteriol. 178:3809-3817(1996).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   STRAIN=PAO1;
RX   MEDLINE=20437337; PubMed=10984043;
RA   Stover C.K., Pham X.-Q.T., Erwin A.L., Mizoguchi S.D., Warrener P.,
RA   Hickey M.J., Brinkman F.S.L., Hufnagle W.O., Kowalik D.J., Lagrou M.,
RA   Garber R.L., Goltry L., Tolentino E., Westbrock-Wadman S., Yuan Y.,
RA   Brody L.L., Coulter S.N., Folger K.R., Kas A., Larbig K., Lim R.M.,
RA   Smith K.A., Spencer D.H., Wong G.K.-S., Wu Z., Paulsen I.T.,
RA   Reizer J., Saier M.H., Hancock R.E.W., Lory S., Olson M.V.;
RT   "Complete genome sequence of Pseudomonas aeruginosa PAO1, an
RT   opportunistic pathogen.";
RL   Nature 406:959-964(2000).
RN   [3]
RP   SEQUENCE OF 193-364 FROM N.A.
RC   STRAIN=ATCC 15692 / PAO1;
RX   MEDLINE=93225810; PubMed=8097014;
RA   Hobbs M., Collie E.S.R., Free P.D., Livingston S.P., Mattick J.S.;
RT   "PilS and PilR, a two-component transcriptional regulatory system
RT   controlling expression of type 4 fimbriae in Pseudomonas
RT   aeruginosa.";
RL   Mol. Microbiol. 7:669-682(1993).
CC   -!- COFACTOR: FAD (POTENTIAL).
CC   -!- SIMILARITY: BELONGS TO THE DADA FAMILY OF OXIDOREDUCTASES.
CC   ---------------------------------------------------------------------
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CC   ---------------------------------------------------------------------
DR   EMBL; L48934; AAB39269.1; -.
DR   EMBL; AE004868; AAG07936.1; -.
DR   EMBL; Z12154; CAA78142.1; -.
KW   Hypothetical protein; Oxidoreductase; Flavoprotein; FAD.
FT   NP_BIND       5     19       FAD (ADP PART) (POTENTIAL).
FT   CONFLICT     20     20       E -> K (IN REF. 1).
FT   CONFLICT     23     23       L -> I (IN REF. 1).
FT   CONFLICT     57     57       S -> N (IN REF. 1).
FT   CONFLICT    109    109       R -> P (IN REF. 1).
FT   CONFLICT    193    245       IRGDKVLLAAGAWSGELLKPLGLELPVVPVKGQMILYKCAA
FT                                DFLPRMVLAKGR -> DPWRKGAAGGGRLERRVVEAAWPGT
FT                                ARGTGERSDDPLQVRGGFPAAHGAGQGG (IN REF. 3).
FT   CONFLICT    280    282       ASA -> VSV (IN REF. 1).
SQ   SEQUENCE   364 AA;  39445 MW;  86C82DC62AA7A811 CRC64;

  Query Match             46.6%;  Score 54;  DB 1;  Length 364;
  Best Local Similarity   61.5%;  Pred. No. 0.88;
  Matches    8;  Conservative    3;  Mismatches    2;  Indels    0;  Gaps    0;

Qy       7 LRPGQHWSGLRPG 19
           ::|  ||:|||||
Db     292 MQPVAHWAGLRPG 304


RESULT  13
MFA4_YEAST
ID   MFA4_YEAST     STANDARD;      PRT;   120 AA.
AC   P32435;
DT   01-OCT-1993 (Rel. 27, Created)
DT   01-OCT-1993 (Rel. 27, Last sequence update)
DT   15-DEC-1998 (Rel. 37, Last annotation update)
DE   MATING FACTOR ALPHA-2 PRECURSOR (ALPHA-2 MATING PHEROMONE) [CONTAINS:
DE   MATING FACTOR ALPHA].
GN   MFAL2 OR MF-ALPHA-2 OR YGL089C.
OS   Saccharomyces cerevisiae (Baker's yeast).
OC   Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes;
OC   Saccharomycetales; Saccharomycetaceae; Saccharomyces.
OX   NCBI_TaxID=4932;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=83246532; PubMed=6306574;
RA   Singh A., Chen E.Y., Lugovoy J.M., Chang C.N., Hitzeman R.A.,
RA   Seeburg P.H.;
RT   "Saccharomyces cerevisiae contains two discrete genes coding for the
RT   alpha-factor pheromone.";
RL   Nucleic Acids Res. 11:4049-4063(1983).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   STRAIN=S288C;
RX   MEDLINE=97435481; PubMed=9290212;
RA   Rieger M., Brueckner M., Schaefer M., Mueller-Auer S.;
RT   "Sequence analysis of 203 kilobases from Saccharomyces cerevisiae
RT   chromosome VII.";
RL   Yeast 13:1077-1090(1997).
RN   [3]
RP   SEQUENCE OF THE ACTIVE FACTOR.
RA   Stoetzler D., Kiltz H.-H., Duntze W.;
RT   "Primary structure of alpha-factor peptides from Saccharomyces
RT   cerevisiae.";
RL   Eur. J. Biochem. 69:397-400(1976).
RN   [4]
RP   SEQUENCE OF THE ACTIVE FACTOR.
RX   MEDLINE=78087498; PubMed=340452;
RA   Tanaka T., Kita H., Murakami T., Narita K.;
RT   "Purification and amino acid sequence of mating factor from
RT   Saccharomyces cerevisiae.";
RL   J. Biochem. 82:1681-1687(1977).
CC   -!- FUNCTION: THE ACTIVE FACTOR IS EXCRETED INTO THE CULTURE MEDIUM BY
CC       HAPLOID CELLS OF THE ALPHA MATING TYPE AND ACTS ON CELLS OF THE
CC       OPPOSITE MATING TYPE (TYPE A). IT MEDIATES THE CONJUGATION PROCESS
CC       BETWEEN THE TWO TYPES BY INHIBITING THE INITIATION OF DNA
CC       SYNTHESIS IN TYPE A CELLS AND SYNCHRONIZING THEM WITH TYPE ALPHA.
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CC   ---------------------------------------------------------------------
DR   EMBL; X01582; CAA25739.1; -.
DR   EMBL; X01582; CAA25740.1; ALT_SEQ.
DR   EMBL; X01582; CAA25741.1; ALT_SEQ.
DR   EMBL; Z72611; CAA96795.1; -.
DR   PIR; S05791; S05791.
DR   SGD; S0003057; MF(ALPHA)2.
KW   Pheromone; Cleavage on pair of basic residues; Repeat; Signal.
```

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FT   SIGNAL        1      ?       POTENTIAL.
FT   CHAIN         ?    120       ALPHA-2 MATING PHEROMONE.
FT   PEPTIDE      87     99       MATING FACTOR ALPHA (1ST COPY).
FT   PEPTIDE     108    120       MATING FACTOR ALPHA (2ND COPY).
SQ   SEQUENCE   120 AA;  13271 MW;  10BF3FDB985FBB2D CRC64;


  Query Match             45.3%;  Score 52.5;  DB 1;  Length 120;
  Best Local Similarity   40.0%;  Pred. No. 0.5;
  Matches   12;  Conservative    1;  Mismatches    4;  Indels   13;  Gaps    2;

Qy       2 HWSYGLRPGQ------------HWSGLRPG 19
           ||   |||||             ||  |:||
Db      88 HW-LNLRPGQPMYKREANADAWHWLQLKPG 116


RESULT  14
[redacted]HAPBU
[redacted]GON1_HAPBU     STANDARD;      PRT;    94 AA.
AC   P51918; O93387;
DT   01-OCT-1996 (Rel. 34, Created)
DT   30-MAY-2000 (Rel. 39, Last sequence update)
DT   30-MAY-2000 (Rel. 39, Last annotation update)
DE   GONADOLIBERIN I PRECURSOR (GONADOTROPIN-RELEASING HORMONE I) (GNRH-I)
DE   (LH-RH I) (LULIBERIN I).
GN   GNRH1.
OS   Haplochromis burtoni.
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
OC   Acanthomorpha; Acanthopterygii; Percomorpha; Perciformes; Labroidei;
OC   Cichlidae; Astatotilapia.
OX   NCBI_TaxID=8153;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=95396797; PubMed=7667296;
RA   White S.A., Kasten T.L., Bond C.T., Adelman J.P., Fernald R.D.;
RT   "Three gonadotropin-releasing hormone genes in one organism suggest
RT   novel roles for an ancient peptide.";
RL   Proc. Natl. Acad. Sci. U.S.A. 92:8363-8367(1995).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=99061842; PubMed=9843638;
RA   White R.B., Fernald R.D.;
RT   "Ontogeny of gonadotropin-releasing hormone (GnRH) gene expression
RT   reveals a distinct origin for GnRH-containing neurons in the
R[redacted]midbrain.";
[redacted]Gen. Comp. Endocrinol. 112:322-329(1998).
[redacted][3]
RP   SEQUENCE OF 23-32.
RC   TISSUE=Pituitary;
RX   MEDLINE=95372591; PubMed=7644702;
RA   Powell J.F.F., Fischer W.H., Park M., Craig A.G., Rivier J.E.,
RA   White S.A., Francis R.C., Fernald R.D., Licht P., Warby C.,
RA   Sherwood N.M.;
RT   "Primary structure of solitary form of gonadotropin-releasing hormone
RT   (GnRH) in cichlid pituitary; three forms of GnRH in brain of cichlid
RT   and pumpkinseed fish.";
RL   Regul. Pept. 57:43-53(1995).
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS. MAY BE
CC       RESPONSIBLE FOR THE REGULATION OF THE HYPOTHALAMIC-PITUITARY-
CC       GONADAL AXIS.
CC   -!- TISSUE SPECIFICITY: SYNTHESIZED IN PREOPTIC NEURONS AND IS
CC       TRANSPORTED TO THE PITUITARY IN THE PREOPTIC-HYPOPHYSEAL AXONS.
CC   -!- MASS SPECTROMETRY: MW=1113.9; METHOD=MALDI; RANGE=23-32.
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; U31865; AAC59691.1; -.
DR   EMBL; AF076961; AAC27716.1; -.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Signal; Multigene family.
FT   SIGNAL        1     22
FT   CHAIN        23     94       PROGONADOLIBERIN I.
FT   PEPTIDE      23     32       GONADOLIBERIN I.
FT   PEPTIDE      36     94       GNRH-ASSOCIATED PEPTIDE I (POTENTIAL).
FT   MOD_RES      23     23       PYRROLIDONE CARBOXYLIC ACID.
FT   MOD_RES      32     32       AMIDATION (G-33 PROVIDE AMIDE GROUP).
FT   CONFLICT     86     94       ENGHRTFKK -> KMDTGHSRNERFL (IN REF. 1).
SQ   SEQUENCE   94 AA;  10382 MW;  E57DBA83333278D7 CRC64;


  Query Match             44.8%;  Score 52;  DB 1;  Length 94;
  Best Local Similarity   88.9%;  Pred. No. 0.46;
  Matches    8;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy       2 HWSYGLRPG 10
           |||||| ||
Db      24 HWSYGLSPG 32


RESULT  15
GON1_PAGMA
ID   GON1_PAGMA     STANDARD;      PRT;    95 AA.
AC   P70074;
DT   15-JUL-1998 (Rel. 36, Created)
DT   15-JUL-1998 (Rel. 36, Last sequence update)
DT   15-DEC-1998 (Rel. 37, Last annotation update)
DE   GONADOLIBERIN I PRECURSOR (GONADOTROPIN-RELEASING HORMONE I) (GNRH-I)
DE   (LH-RH I) (LULIBERIN I).
OS   Pagrus major (Red sea bream) (Chrysophrys major).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
OC   Acanthomorpha; Acanthopterygii; Percomorpha; Perciformes; Percoidei;
OC   Sparidae; Chrysophrys.
OX   NCBI_TaxID=8171;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Brain;
RA   Okuzawa K., Granneman J., Bogerd J., Goos H., Zohar Y., Kagawa H.;
RL   Submitted (SEP-1996) to the EMBL/GenBank/DDBJ databases.
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS (BY
CC       SIMILARITY).
CC   -!- SIMILARITY: BELONGS TO THE GNRH FAMILY.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; D86582; BAA13129.1; -.
DR   InterPro; IPR002012; -.
DR   Pfam; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Cleavage on pair of basic residues; Hormone; Amidation; Hypothalamus;
KW   Signal; Multigene family.
FT   SIGNAL        1     23       POTENTIAL.
FT   CHAIN        24     95       PROGONADOLIBERIN I.
FT   PEPTIDE      24     33       GONADOLIBERIN I.
FT   PEPTIDE      37     95       GNRH-ASSOCIATED PEPTIDE I (POTENTIAL).
FT   MOD_RES      24     24       PYRROLIDONE CARBOXYLIC ACID (BY
FT                                SIMILARITY).
FT   MOD_RES      33     33       AMIDATION (G-34 PROVIDE AMIDE GROUP)
FT                                (BY SIMILARITY).
```

SQ SEQUENCE 95 AA; 10566 MW; 61E79C990328D73E CRC64;

Query Match 44.8%; Score 52; DB 1; Length 95;
Best Local Similarity 88.9%; Pred. No. 0.47;
Matches 8; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

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Qy       2 HWSYGLRPG 10
           |||||| ||
Db      25 HWSYGLSPG 33
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Search completed: May 25, 2001, 15:34:40
Job time: 108 sec

GenCore version 4.5

OM protein - protein search, using sw model

Run on: May 25, 2001, 15:32:37 ; Search time 17.78 Seconds
(without alignments)
131.842 Million cell updates/sec

Title: US-09-214-009-1
Perfect score: 116
Sequence: 1 XHWSYGLRPGQHWSGLRPGX 20

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 374700 seqs, 117207915 residues

Total number of hits satisfying chosen parameters: 374700

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : SPTREMBL_15:*
1: sp_archea:*
2: sp_bacteria:*
3: sp_fungi:*
4: sp_human:*
5: sp_invertebrate:*
6: sp_mammal:*
7: sp_mhc:*
8: sp_organelle:*
9: sp_phage:*
10: sp_plant:*
11: sp_rodent:*
12: sp_unclassified:*
13: sp_vertebrate:*
14: sp_virus:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	58	50.0	91	13	Q9PRH0	Q9prh0 anguilla ja
2	52	44.8	87	13	Q9YI26	Q9yi26 sparus aura
3	52	44.8	95	13	O73812	O73812 morone saxa
4	52	44.8	99	13	Q9IA10	Q9ia10 dicentrarch
5	51.5	44.4	263	13	Q9PT52	Q9pt52 agkistrodon
6	51	44.0	2245	2	Q9L6C9	Q9l6c9 pseudomonas
7	50	43.1	90	13	Q9IAU2	Q9iau2 rana dybows
8	49	42.2	51	2	O88004	O88004 bordetella
9	49	42.2	75	2	O69271	O69271 corynebacte
10	49	42.2	219	2	Q55302	Q55302 synechocyst
11	49	42.2	219	2	P72633	P72633 synechocyst
12	49	42.2	315	5	P91045	P91045 caenorhabdi
13	48	41.4	615	2	Q9PCG7	Q9pcg7 xylella fas
14	47.5	40.9	388	1	Q9YD14	Q9yd14 aeropyrum p
15	47	40.5	77	2	Q9XD65	Q9xd65 corynebacte
16	47	40.5	1173	11	Q9QXY3	Q9qxy3 rattus norv
17	47	40.5	1197	11	Q9QXY2	Q9qxy2 rattus norv
18	47	40.5	1216	11	O70298	O70298 mus musculu
19	47	40.5	1216	11	Q9QWI6	Q9qwi6 mus musculu
20	46	39.7	186	2	Q55597	Q55597 synechocyst
21	46	39.7	197	4	O00509	O00509 homo sapien
22	46	39.7	647	5	Q9VC60	Q9vc60 drosophila
23	46	39.7	1638	5	Q9V5X3	Q9v5x3 drosophila
24	45	38.8	33	13	Q9W7G0	Q9w7g0 oncorhynchu
25	45	38.8	33	13	Q9PT34	Q9pt34 oncorhynchu
26	45	38.8	82	13	Q92094	Q92094 oncorhynchu
27	45	38.8	82	13	Q9W7G1	Q9w7g1 oncorhynchu
28	45	38.8	82	13	Q9I8Q0	Q9i8q0 oncorhynchu
29	45	38.8	82	13	Q9I8P9	Q9i8p9 oncorhynchu
30	45	38.8	88	13	Q9PSY9	Q9psy9 sparus aura
31	45	38.8	89	2	Q9ZNI3	Q9zni3 pseudomonas
32	45	38.8	90	13	Q9IA09	Q9ia09 dicentrarch
33	45	38.8	133	2	O86708	O86708 streptomyce
34	45	38.8	149	1	Q9YDS5	Q9yds5 aeropyrum p
35	45	38.8	182	14	Q85656	Q85656 moloney mur
36	45	38.8	409	11	Q61530	Q61530 mus musculu
37	45	38.8	484	4	Q9UED5	Q9ued5 homo sapien
38	45	38.8	531	4	Q9Y4C5	Q9y4c5 homo sapien
39	45	38.8	571	2	O32213	O32213 bacillus su
40	45	38.8	696	5	Q9VCU2	Q9vcu2 drosophila
41	45	38.8	1020	2	Q9KG76	Q9kg76 bacillus ha
42	45	38.8	1444	5	Q17591	Q17591 caenorhabdi
43	44.5	38.4	240	2	Q9L0U5	Q9l0u5 streptomyce
44	44	37.9	239	2	O87976	O87976 bordetella
45	44	37.9	545	14	Q86631	Q86631 cherry leaf

ALIGNMENTS

RESULT 1
Q9PRH0
ID Q9PRH0 PRELIMINARY; PRT; 91 AA.
AC Q9PRH0;
DT 01-MAY-2000 (TrEMBLrel. 13, Created)
DT 01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
DT 01-JUN-2000 (TrEMBLrel. 14, Last annotation update)
DE PREPRO-MGNRH PRECURSOR.
OS Anguilla japonica (Japanese eel).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Anguilliformes; Anguilloidei;
OC Anguillidae; Anguilla.
OX NCBI_TaxID=7937;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=BRAIN;
RA Okubo K., Suetake H., Aida K.;
RT "Expression of two gonadotropin-releasing hormone (GnRH) precursor
RT genes in various tissues of the Japanese eel and evolution of GnRH.";
RL Zool. Sci. 16:471-478(1999).
RN [2]
RP SEQUENCE FROM N.A.
RA Okubo K., Suetake H., Aida K.;
RT "A splicing variant for the prepro-mammalian gonadotropin-releasing
RT hormone (prepro-mGnRH) mRNA is present in the brain and various
RT peripheral tissues of the Japanese eel.";
RL Zool. Sci. 16:645-651(1999).
DR EMBL; AB026989; BAA82608.1; -.
DR EMBL; AB026991; BAA83597.1; -.
DR INTERPRO; IPR002012; -.
DR PFAM; PF00446; GnRH; 1.
DR PROSITE; PS00473; GNRH; 1.
KW Signal.
FT SIGNAL 1 22 POTENTIAL.
FT CHAIN 23 32 MGNRH.
FT CHAIN 33 91 GNRH ASSOCIATED PEPTIDE.
SQ SEQUENCE 91 AA; 9893 MW; BA15C9DC08434A7B CRC64;

Query Match 50.0%; Score 58; DB 13; Length 91;
Best Local Similarity 100.0%; Pred. No. 0.28;
Matches 9; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy      2 HWSYGLRPG 10
          |||||||||
Db     24 HWSYGLRPG 32


RESULT   2
Q9YI26
ID   Q9YI26      PRELIMINARY;      PRT;    87 AA.
AC   Q9YI26;
DT   01-MAY-1999 (TrEMBLrel. 10, Created)
DT   01-MAY-1999 (TrEMBLrel. 10, Last sequence update)
DT   01-MAY-2000 (TrEMBLrel. 13, Last annotation update)
DE   GONADOLIBERIN (GONADOTROPIN-RELEASING HORMONE) (GNRH) (LULIBERIN)
DE   (FRAGMENT).
OS   Sparus aurata (Gilthead sea bream).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
OC   Acanthomorpha; Acanthopterygii; Percomorpha; Perciformes; Percoidei;
OC   Sparidae; Sparus.
OX   NCBI_TaxID=8175;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=OVARY;
RA   Nabissi M.;
RL   Submitted (FEB-1998) to the EMBL/GenBank/DDBJ databases.
CC   -!- FUNCTION: STIMULATES THE SECRETION OF BOTH LUTEINIZING AND
CC       FOLLICLE-STIMULATING HORMONES.
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS.
DR   EMBL; AF046801; AAD02427.1; -.
DR   INTERPRO; IPR002012; -.
DR   PFAM; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
KW   Hormone; Amidation.
FT   NON_TER       1      1
FT   NON_TER      87     87
SQ   SEQUENCE   87 AA;  9871 MW;  0D2463533D96782A CRC64;


  Query Match             44.8%;  Score 52;  DB 13;  Length 87;
  Best Local Similarity   88.9%;  Pred. No. 1.8;
  Matches    8;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      2 HWSYGLRPG 10
          |||||| ||
Db     22 HWSYGLSPG 30


RESULT   3
O73812
ID   O73812      PRELIMINARY;      PRT;    95 AA.
AC   O73812;
DT   01-AUG-1998 (TrEMBLrel. 07, Created)
DT   01-AUG-1998 (TrEMBLrel. 07, Last sequence update)
DT   01-OCT-2000 (TrEMBLrel. 15, Last annotation update)
DE   GONADOLIBERIN (GONADOTROPIN-RELEASING HORMONE) (GNRH) (LULIBERIN).
OS   Morone saxatilis (Striped bass).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
OC   Acanthomorpha; Acanthopterygii; Percomorpha; Perciformes; Percoidei;
OC   Moronidae; Morone.
OX   NCBI_TaxID=34816;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Chow M.M., Kight K.E., Gothilf Y., Alok D., Zohar Y.;
RL   Submitted (MAR-1998) to the EMBL/GenBank/DDBJ databases.
CC   -!- FUNCTION: STIMULATES THE SECRETION OF BOTH LUTEINIZING AND
CC       FOLLICLE-STIMULATING HORMONES.
CC   -!- FUNCTION: STIMULATES THE SECRETION OF GONADOTROPINS.
DR   EMBL; AF056314; AAD03817.1; -.
DR   INTERPRO; IPR002012; -.
DR   PFAM; PF00446; GnRH; 1.
DR   PROSITE; PS00473; GNRH; 1.
DR   PRODOM; PD005581; -; 1.
KW   Hormone; Amidation.
SQ   SEQUENCE   95 AA;  10411 MW;  980C6988FC279BFC CRC64;


  Query Match             44.8%;  Score 52;  DB 13;  Length 95;
  Best Local Similarity   88.9%;  Pred. No. 2;
  Matches    8;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      2 HWSYGLRPG 10
          |||||| ||
Db     24 HWSYGLSPG 32


RESULT   4
Q9IA10
ID   Q9IA10      PRELIMINARY;      PRT;    99 AA.
AC   Q9IA10;
DT   01-OCT-2000 (TrEMBLrel. 15, Created)
DT   01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
DT   01-OCT-2000 (TrEMBLrel. 15, Last annotation update)
DE   GONADOTROPIN RELEASING HORMONE SEABREAM ISOFORM.
OS   Dicentrarchus labrax (European sea bass).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
OC   Acanthomorpha; Acanthopterygii; Percomorpha; Perciformes; Percoidei;
OC   Moronidae; Dicentrarchus.
OX   NCBI_TaxID=13489;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=BRAIN;
RA   Gonzalez-Martinez D., Madigou T., Zmora N., Anglade I., Zanuy S.,
RA   Zohar Y., Elizur A., Munoz-Cueto J.A., Kah O.;
RT   "Differential expression of three different prepro-GnRH
RT   (Gonadotrophin-releasing hormone) messengers in the brain of the
RT   European sea bass (Dicentrarchus labrax).";
RL   Submitted (JAN-2000) to the EMBL/GenBank/DDBJ databases.
RN   [2]
RP   SEQUENCE FROM N.A.
RC   TISSUE=BRAIN;
RA   Zmora N., Zohar Y., Elizur A.;
RT   "3 GnRH form in the seabass Dicentrarchus labrax.";
RL   Submitted (JAN-2000) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AF224279; AAF62898.1; -.
SQ   SEQUENCE   99 AA;  10758 MW;  EC8AEEC93CC02904 CRC64;


  Query Match             44.8%;  Score 52;  DB 13;  Length 99;
  Best Local Similarity   88.9%;  Pred. No. 2.1;
  Matches    8;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      2 HWSYGLRPG 10
          |||||| ||
Db     28 HWSYGLSPG 36


RESULT   5
Q9PT52
ID   Q9PT52      PRELIMINARY;      PRT;   263 AA.
AC   Q9PT52;
DT   01-MAY-2000 (TrEMBLrel. 13, Created)
DT   01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
DT   01-JUN-2000 (TrEMBLrel. 14, Last annotation update)
DE   BPP-CNP PRECURSOR HOMOLOG.
OS   Agkistrodon halys blomhoffi (Mamushi) (Gloydius blomhoffii).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Lepidosauria; Squamata; Scleroglossa; Serpentes; Colubroidea;
OC   Viperidae; Crotalinae; Agkistrodon.
OX   NCBI_TaxID=61300;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=VENOM GLAND;
RA   Murayama N.;
```

```
RT   "Agkistrodon blomhoffi cDNA for BPP-CNP precursor homolog.";
RL   Submitted (DEC-1998) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AB020810; BAA36953.1; -.
DR   INTERPRO; IPR000663; -.
DR   PFAM; PF00212; ANP; 1.
DR   PRINTS; PR00710; NATPEPTIDES.
DR   PROSITE; PS00263; NATRIURETIC_PEPTIDE; 1.
FT   CHAIN        31     41       BLOMHOTIN.
FT   CHAIN        31     40       POTENTIATOR A.
FT   CHAIN        49     59       LEU3-BLOMHOTIN.
FT   CHAIN        67     77       POTENTIATOR C.
FT   CHAIN        85     95       POTENTIATOR B.
FT   CHAIN       103    113       POTENTIATOR B.
FT   CHAIN       117    127       POTENTIATOR E.
FT   CHAIN       242    263       CNP-22.
SQ   SEQUENCE   263 AA;  27339 MW;  407BA9A572BF5FC8 CRC64;


  Query Match             44.4%;  Score 51.5;  DB 13;  Length 263;
  Best Local Similarity   50.0%;  Pred. No. 6.6;
  Matches   13;  Conservative    0;  Mismatches    4;  Indels    9;  Gaps    2;

Qy       3 WSYGLRPG--------QHWS-GLRPG 19
           || || ||        | || || ||
Db      47 WSQGLPPGPPIPRLVVQQWSQGLPPG 72


RESULT   6
Q9L6C9
ID   Q9L6C9      PRELIMINARY;      PRT;  2245 AA.
AC   Q9L6C9;
DT   01-OCT-2000 (TrEMBLrel. 15, Created)
DT   01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
DT   01-OCT-2000 (TrEMBLrel. 15, Last annotation update)
DE   PYOVERDINE SYNTHETASE B.
GN   PVSB.
OS   Pseudomonas fluorescens.
OC   Bacteria; Proteobacteria; gamma subdivision; Pseudomonadaceae;
OC   Pseudomonas.
OX   NCBI_TaxID=294;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Mossialos D., Koedam N., Pirnay J., Cornelis P.;
RT   "Cloning by Functional Complementation of a Peptide Synthetase Gene
RT   Involved in Pyoverdine Biosynthesis in Pseudomonas fluorescens ATCC
RT   17400.";
RL   Submitted (FEB-2000) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AF237701; AAF40220.1; -.
SQ   SEQUENCE   2245 AA;  247497 MW;  F5C3233342079278 CRC64;


  Query Match             44.0%;  Score 51;  DB 2;  Length 2245;
  Best Local Similarity   58.3%;  Pred. No. 68;
  Matches    7;  Conservative    1;  Mismatches    4;  Indels    0;  Gaps    0;

Qy       2 HWSYGLRPGQHW 13
           ||  |: | |||
Db     703 HWPLGMTPIQHW 714


RESULT   7
Q9IAU2
ID   Q9IAU2      PRELIMINARY;      PRT;    90 AA.
AC   Q9IAU2;
DT   01-OCT-2000 (TrEMBLrel. 15, Created)
DT   01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
DT   01-OCT-2000 (TrEMBLrel. 15, Last annotation update)
DE   GONADOTROPIN-RELEASING HORMONE.
OS   Rana dybowskii (Frog).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Amphibia; Batrachia; Anura; Neobatrachia; Ranoidea; Ranidae; Rana.
OX   NCBI_TaxID=71582;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=BRAIN;
RA   Yoo M.S., Kang H.M., Choi H.S., Chun S.Y., Troskie B., Millar R.P.,
RA   Kwon H.B.;
RT   "Molecular Cloning, Distribution and Phamacological Characterization
RT   of a Novel Gonadotropin-Releasing Hormone([Trp8]GnRH) in Frog Brain.";
RL   Mol. Cell. Endocrinol. 0:0-0(2000).
DR   EMBL; AF139911; AAF44343.1; -.
SQ   SEQUENCE   90 AA;  10368 MW;  C3D573E78B52ABFA CRC64;


  Query Match             43.1%;  Score 50;  DB 13;  Length 90;
  Best Local Similarity   88.9%;  Pred. No. 3.6;
  Matches    8;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy       2 HWSYGLRPG 10
           |||||| ||
Db      26 HWSYGLWPG 34


RESULT   8
O88004
ID   O88004      PRELIMINARY;      PRT;    51 AA.
AC   O88004;
DT   01-NOV-1998 (TrEMBLrel. 08, Created)
DT   01-NOV-1998 (TrEMBLrel. 08, Last sequence update)
DT   01-NOV-1998 (TrEMBLrel. 08, Last annotation update)
DE   PUTATIVE SECRETED PROTEIN.
GN   BBLPS1.35C.
OS   Bordetella bronchiseptica.
OC   Bacteria; Proteobacteria; beta subdivision; Alcaligenaceae;
OC   Bordetella.
OX   NCBI_TaxID=518;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=CN7635E;
RA   Stevens K., Churcher C.M., Badcock K.L.;
RL   Submitted (AUG-1998) to the EMBL/GenBank/DDBJ databases.
RN   [2]
RP   SEQUENCE FROM N.A.
RC   STRAIN=CN7635E;
RA   Parkhill J., Preston A., Maskell D.J., Barrell B.G.;
RL   Submitted (AUG-1998) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AJ007747; CAA07674.1; -.
SQ   SEQUENCE   51 AA;  5778 MW;  772B0E6D0486D90A CRC64;


  Query Match             42.2%;  Score 49;  DB 2;  Length 51;
  Best Local Similarity   62.5%;  Pred. No. 2.8;
  Matches   10;  Conservative    0;  Mismatches    4;  Indels    2;  Gaps    1;

Qy       3 WSYGLRPGQHWSGLRP 18
           | | |  || | ||||
Db      14 WVYAL--GQGWLGLRP 27


RESULT   9
O69271
ID   O69271      PRELIMINARY;      PRT;    75 AA.
AC   O69271;
DT   01-AUG-1998 (TrEMBLrel. 07, Created)
DT   01-AUG-1998 (TrEMBLrel. 07, Last sequence update)
DT   01-NOV-1998 (TrEMBLrel. 08, Last annotation update)
DE   NRDH-REDOXIN.
GN   NRDH.
OS   Corynebacterium ammoniagenes (Brevibacterium ammoniagenes).
OC   Bacteria; Firmicutes; Actinobacteria; Actinobacteridae;
OC   Actinomycetales; Corynebacterineae; Corynebacteriaceae;
OC   Corynebacterium.
OX   NCBI_TaxID=1697;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=ATCC6872;
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RX   MEDLINE=98136125; PubMed=9468481;
RA   Fieschi F., Torrents E., Toulokhonova L., Jordan A., Hellman U.,
RA   Barbe J., Gibert I., Karlsson M., Sjoeberg B.M.;
RT   "The manganese-containing ribonucleotide reductase of Corynebacterium
RT   ammoniagenes is a class Ib enzyme.";
RL   J. Biol. Chem. 273:4329-4337(1998).
DR   EMBL; Y09572; CAA70763.1; -.
SQ   SEQUENCE   75 AA;  8290 MW;  4C4D3C37E51C11AD CRC64;


  Query Match             42.2%;  Score 49;  DB 2;  Length 75;
  Best Local Similarity   77.8%;  Pred. No. 4.2;
  Matches    7;  Conservative    1;  Mismatches    1;  Indels    0;  Gaps    0;

Qy      10 GQHWSGLRP 18
           |:|||| ||
Db      58 GEHWSGFRP 66


RESULT  10
Q55302
ID   Q55302      PRELIMINARY;      PRT;   219 AA.
AC   Q55302;
DT   01-NOV-1996 (TrEMBLrel. 01, Created)
DT   01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT   01-NOV-1996 (TrEMBLrel. 01, Last annotation update)
DE   HYPOTHETICAL 23.9 KDA PROTEIN.
OS   Synechocystis sp.
OC   Bacteria; Cyanobacteria; Chroococcales; Synechocystis.
OX   NCBI_TaxID=1143;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Zuther E., Kiepert K., Hagemann M.;
RL   Submitted (MAR-1996) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; L76928; AAA92547.1; -.
KW   Hypothetical protein.
SQ   SEQUENCE   219 AA;  23913 MW;  4802BA4CE030D17E CRC64;


  Query Match             42.2%;  Score 49;  DB 2;  Length 219;
  Best Local Similarity   52.9%;  Pred. No. 12;
  Matches    9;  Conservative    1;  Mismatches    5;  Indels    2;  Gaps    1;

Qy       2 HWSYGLRPGQHWSGLRP 18
           ||  | ||  |||  :|
Db     193 HWLLGDRP--HWSAAQP 207


RESULT  11
P72633
ID   P72633      PRELIMINARY;      PRT;   219 AA.
AC   P72633;
DT   01-FEB-1997 (TrEMBLrel. 02, Created)
DT   01-FEB-1997 (TrEMBLrel. 02, Last sequence update)
DT   01-JUN-2000 (TrEMBLrel. 14, Last annotation update)
DE   HYPOTHETICAL 24.0 KDA PROTEIN.
GN   SLL1063.
OS   Synechocystis sp. (strain PCC 6803).
OC   Bacteria; Cyanobacteria; Chroococcales; Synechocystis.
OX   NCBI_TaxID=1148;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=97061201; PubMed=8905231;
RA   Kaneko T., Sato S., Kotani H., Tanaka A., Asamizu E., Nakamura Y.,
RA   Miyajima N., Hirosawa M., Sugiura M., Sasamoto S., Kimura T.,
RA   Hosouchi T., Matsuno A., Muraki A., Nakazaki N., Naruo K., Okumura S.,
RA   Shimpo S., Takeuchi C., Wada T., Watanabe A., Yamada M., Yasuda M.,
RA   Tabata S.;
RT   "Sequence analysis of the genome of the unicellular cyanobacterium
RT   Synechocystis sp. strain PCC6803. II. Sequence determination of the
RT   entire genome and assignment of potential protein-coding regions.";
RL   DNA Res. 3:109-136(1996).
DR   EMBL; D90899; BAA16635.1; -.
KW   Hypothetical protein.
SQ   SEQUENCE   219 AA;  23996 MW;  4802BA4CF571857E CRC64;


  Query Match             42.2%;  Score 49;  DB 2;  Length 219;
  Best Local Similarity   52.9%;  Pred. No. 12;
  Matches    9;  Conservative    1;  Mismatches    5;  Indels    2;  Gaps    1;

Qy       2 HWSYGLRPGQHWSGLRP 18
           ||  | ||  |||  :|
Db     193 HWLLGDRP--HWSAAQP 207


RESULT  12
P91045
ID   P91045      PRELIMINARY;      PRT;   315 AA.
AC   P91045;
DT   01-MAY-1997 (TrEMBLrel. 03, Created)
DT   01-MAY-1997 (TrEMBLrel. 03, Last sequence update)
DT   01-MAY-2000 (TrEMBLrel. 13, Last annotation update)
DE   SIMILARITY TO HUMAN GUANINE NUCLEOTIDE REGULATORY PROTEIN.
GN   C13A10.3.
OS   Caenorhabditis elegans.
OC   Eukaryota; Metazoa; Nematoda; Chromadorea; Rhabditida; Rhabditoidea;
OC   Rhabditidae; Peloderinae; Caenorhabditis.
OX   NCBI_TaxID=6239;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=BRISTOL N2;
RX   MEDLINE=94150718; PubMed=7906398;
RA   Wilson R., Ainscough R., Anderson K., Baynes C., Berks M.,
RA   Bonfield J., Burton J., Connell M., Copsey T., Cooper J., Coulson A.,
RA   Craxton M., Dear S., Du Z., Durbin R., Favello A., Fulton L.,
RA   Gardner A., Green P., Hawkins T., Hillier L., Jier M., Johnston L.,
RA   Jones M., Kershaw J., Kirsten J., Laister N., Latreille P.,
RA   Lightning J., Lloyd C., Mcmurray A., Mortimore B., O'Callaghan M.,
RA   Parsons J., Percy C., Rifken L., Roopra A., Saunders D., Shownkeen R.,
RA   Smaldon N., Smith A., Sonnhammer E., Staden R., Sulston J.,
RA   Thierry-Mieg J., Thomas K., Vaudin M., Vaughan K., Waterston R.,
RA   Watson A., Weinstock L., Wilkinson-Sproat J., Wohldman P.;
RT   "2.2 Mb of contiguous nucleotide sequence from chromosome III of C.
RT   elegans.";
RL   Nature 368:32-38(1994).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   STRAIN=BRISTOL N2;
RA   Pauley A., Maggi L.;
RL   Submitted (JAN-1997) to the EMBL/GenBank/DDBJ databases.
RN   [3]
RP   SEQUENCE FROM N.A.
RC   STRAIN=BRISTOL N2;
RA   Waterston R.;
RL   Submitted (DEC-1996) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; U80841; AAB37940.1; -.
DR   INTERPRO; IPR001452; -.
DR   PFAM; PF00018; SH3; 1.
DR   PROSITE; PS50002; SH3; 1.
SQ   SEQUENCE   315 AA;  36385 MW;  B8572746211CFAAC CRC64;


  Query Match             42.2%;  Score 49;  DB 5;  Length 315;
  Best Local Similarity   63.2%;  Pred. No. 18;
  Matches   12;  Conservative    1;  Mismatches    2;  Indels    4;  Gaps    2;

Qy       2 HWSYG--LRPGQHWSGLRP 18
           |||||  || ||  ||: |
Db      79 HWSYGTNLRTGQ--SGIFP 95


RESULT  13
Q9PCG7
ID   Q9PCG7      PRELIMINARY;      PRT;   615 AA.
AC   Q9PCG7;
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DT   01-OCT-2000 (TrEMBLrel. 15, Created)
DT   01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
DT   01-OCT-2000 (TrEMBLrel. 15, Last annotation update)
DE   HYPOTHETICAL PROTEIN XF1814.
GN   XF1814.
OS   Xylella fastidiosa.
OC   Bacteria; Proteobacteria; gamma subdivision; Xanthomonas group;
OC   Xylella.
OX   NCBI_TaxID=2371;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=9A5C;
RX   MEDLINE=20365717; PubMed=10910347;
RA   Simpson A.J.G., Reinach F.C., Arruda P., Abreu F.A., Acencio M.,
RA   Alvarenga R., Alves L.M.C., Araya J.E., Baia G.S., Baptista C.S.,
RA   Barros M.H., Bonaccorsi E.D., Bordin S., Bove J.M., Briones M.R.S.,
RA   Bueno M.R.P., Camargo A.A., Camargo L.E.A., Carraro D.M., Carrer H.,
RA   Colauto N.B., Colombo C., Costa F.F., Costa M.C.R., Costa-Neto C.M.,
RA   Coutinho L.L., Cristofani M., Dias-Neto E., Docena C., El-Dorry H.,
RA   Facincani A.P., Ferreira A.J.S., Ferreira V.C.A., Ferro J.A.,
RA   Fraga J.S., Franca S.C., Franco M.C., Frohme M., Furlan L.R.,
RA   Garnier M., Goldman G.H., Goldman M.H.S., Gomes S.L., Gruber A.,
RA   Ho P.L., Hoheisel J.D., Junqueira M.L., Kemper E.L., Kitajima J.P.,
RA   Krieger J.E., Kuramae E.E., Laigret F., Lambais M.R., Leite L.C.C.,
RA   Lemos E.G.M., Lemos M.V.F., Lopes S.A., Lopes C.R., Machado J.A.,
RA   Machado M.A., Madeira A.M.B.N., Madeira H.M.F., Marino C.L.,
RA   Marques M.V., Martins E.A.L., Martins E.M.F., Matsukuma A.Y.,
RA   Menck C.F.M., Miracca E.C., Miyaki C.Y., Monteiro-Vitorello C.B.,
RA   Moon D.H., Nagai M.A., Nascimento A.L.T.O., Netto L.E.S.,
RA   Nhani A. Jr., Nobrega F.G., Nunes L.R., Oliveira M.A.,
RA   de Oliveira M.C., de Oliveira R.C., Palmieri D.A., Paris A.,
RA   Peixoto B.R., Pereira G.A.G., Pereira H.A. Jr., Pesquero J.B.,
RA   Quaggio R.B., Roberto P.G., Rodrigues V., de Rosa A.J.M.,
RA   de Rosa V.E. Jr., de Sa R.G., Santelli R.V., Sawasaki H.E.,
RA   da Silva A.C.R., da Silva A.M., da Silva F.R., Silva W.A. Jr.,
RA   da Silveira J.F., Silvestri M.L.Z., Siqueira W.J., de Souza A.A.,
RA   de Souza A.P., Terenzi M.F., Truffi D., Tsai S.M., Tsuhako M.H.,
RA   Vallada H., Van Sluys M.A., Verjovski-Almeida S., Vettore A.L.,
RA   Zago M.A., Zatz M., Meidanis J., Setubal J.C.;
RT   "The genome sequence of the plant pathogen Xylella fastidiosa.";
RL   Nature 406:151-157(2000).
DR   EMBL; AE004002; AAF84620.1; -.
KW   Hypothetical protein.
SQ   SEQUENCE   615 AA;  68787 MW;  585E038303934370 CRC64;


  Query Match             41.4%;  Score 48;  DB 2;  Length 615;
  Best Local Similarity   72.7%;  Pred. No. 48;
  Matches    8;  Conservative    1;  Mismatches    2;  Indels    0;  Gaps    0;

Qy       7 LRPGQHWSGLR 17
           | ||:|| |||
Db     585 LPPGRHWLGLR 595


RESULT  14
Q9YD14
ID   Q9YD14      PRELIMINARY;      PRT;   388 AA.
AC   Q9YD14;
DT   01-NOV-1999 (TrEMBLrel. 12, Created)
DT   01-NOV-1999 (TrEMBLrel. 12, Last sequence update)
DT   01-MAY-2000 (TrEMBLrel. 13, Last annotation update)
DE   388AA LONG HYPOTHETICAL FMU PROTEIN.
GN   APE1098.
OS   Aeropyrum pernix.
OC   Archaea; Crenarchaeota; Desulfurococcales; Desulfurococcaceae;
OC   Aeropyrum.
OX   NCBI_TaxID=56636;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=K1;
RX   MEDLINE=99310339; PubMed=10382966;
RA   Kawarabayasi Y., Hino Y., Horikawa H., Yamazaki S., Haikawa Y.,
RA   Jin-no K., Takahashi M., Sekine M., Baba S., Ankai A., Kosugi H.,
RA   Hosoyama A., Fukui S., Nagai Y., Nishijima K., Nakazawa H.,
RA   Takamiya M., Masuda S., Funahashi T., Tanaka T., Kudoh Y.,
RA   Yamazaki J., Kushida N., Oguchi A., Aoki K., Kubota K., Nakamura Y.,
RA   Nomura N., Sako Y., Kikuchi H.;
RT   "Complete genome sequence of an aerobic hyper-thermophilic
RT   crenarchaeon, Aeropyrum pernix K1.";
RL   DNA Res. 6:83-101(1999).
DR   EMBL; AP000060; BAA80083.1; -.
DR   INTERPRO; IPR001678; -.
DR   INTERPRO; IPR002478; -.
DR   PFAM; PF01189; Nol1_Nop2_Sun; 1.
DR   PFAM; PF01472; PUA; 1.
SQ   SEQUENCE   388 AA;  42535 MW;  A9E10CEAAEF0B0AC CRC64;


  Query Match             40.9%;  Score 47.5;  DB 1;  Length 388;
  Best Local Similarity   50.0%;  Pred. No. 36;
  Matches    9;  Conservative    2;  Mismatches    4;  Indels    3;  Gaps    1;

Qy       3 WSYGLRPG---QHWSGLR 17
           ||:|||     : | | |
Db     352 WSWGLRPSRGRRSWLGFR 369


RESULT  15
Q9XD65
ID   Q9XD65      PRELIMINARY;      PRT;    77 AA.
AC   Q9XD65;
DT   01-NOV-1999 (TrEMBLrel. 12, Created)
DT   01-NOV-1999 (TrEMBLrel. 12, Last sequence update)
DT   01-NOV-1999 (TrEMBLrel. 12, Last annotation update)
DE   PUTATIVE GLUTAREDOXIN NRDH.
GN   NRDH.
OS   Corynebacterium glutamicum.
OC   Bacteria; Firmicutes; Actinobacteria; Actinobacteridae;
OC   Actinomycetales; Corynebacterineae; Corynebacteriaceae;
OC   Corynebacterium.
OX   NCBI_TaxID=1718;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=ATCC 13032;
RX   MEDLINE=99368253; PubMed=10439398;
RA   Oehlmann W., Auling G.;
RT   "Ribonucleotide reductase (RNR) of Corynebacterium glutamicum ATCC
RT   13032--genetic characterization of a second class IV enzyme.";
RL   Microbiology 145:1595-1595(1999).
DR   EMBL; AF112535; AAD41034.1; -.
SQ   SEQUENCE   77 AA;  8431 MW;  E31432F8F2BD8C38 CRC64;


  Query Match             40.5%;  Score 47;  DB 2;  Length 77;
  Best Local Similarity   77.8%;  Pred. No. 8.2;
  Matches    7;  Conservative    0;  Mismatches    2;  Indels    0;  Gaps    0;

Qy      10 GQHWSGLRP 18
           | |||| ||
Db      58 GSHWSGFRP 66


Search completed: May 25, 2001, 15:34:28
Job time: 111 sec
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